VOL. VII (NEW SERIES) No. 1

JANUARY, 1898

RE
1
04
V. 7
no. 1

Biological
& Medical
Serials

LIBRARY
OCT 24 1912
UNIVERSITY OF TORONTO

THE OPHTHALMIC RECORD

EDITED BY

CASEY A. WOOD, M. D.
Chicago
G. C. SAVAGE, M. D.
Nashville
GEO. E. DE SCHWEINITZ, M.D.
Philadelphia
JOHN E. WEEKS, M. D.
New York
F. C. HOTZ, M. D.
Chicago
H. V. WÜRDEMANN, M. D.
Milwaukee
W. E. HOPKINS, M. D.
San Francisco
HAROLD GIFFORD, M. D.
Omaha

T. A. WOODRUFF, M. D.
EDITORIAL SECRETARY,
1102 RELIANCE BUILDING, CHICAGO, ILLS.

PUBLISHED MONTHLY

SUBSCRIPTION RATES: IN THE UNITED STATES, CANADA AND MEXICO, $3.00 PER ANNUM, IN ADVANCE. OTHER COUNTRIES OF THE POSTAL UNION, 14 SHILLINGS

THE OPHTHALMIC RECORD
SUITE 3, THE HIGH-BUILDING, CHICAGO, U. S. A.

Entered at the Chicago Post-Office as second-class matter

R. R. Donnelley & Sons Co. Printers, Chicago

COLLABORATORS.

Francis Valk, M.D., New York.

F. B. Eaton, M.D., San Jose, Cal.

A. W. Calhoun, M.D., Atlanta, Ga.

J. W. Stirling, M.D., Montreal, Can.

Frank Allport, M.D., Chicago.

G. Melville Black, M.D., Denver, Col.

Alvin A. Hubbell, M.D., Buffalo, N. Y.

Wm. Dudley Hall, M.D., Boston, Mass.

E. Oliver Belt, M.D., Washington, D. C.

Robert L. Randolph, M.D., Baltimore, Md.

John F. Fulton, M. D., St. Paul, Minn.

C. Devereux Marshall, F.R.C.S. Eng., London, Eng.

Dr. Edward Van Millingen, Constantinople, Turkey.

The February number of the Ophthalmic Record will contain among others an original contribution by Edward Jackson, M.D., "Removal of the Clear Crystalline Lens for High Myopia;" one by Casey A. Wood, M.D., "Primary Sarcoma of the Lid;" one by F. B. Eaton, M.D., "Extensive Laceration of the Eye-ball; Recovery With Good Vision."

There will also appear reviews of the most recent contributions to Ophthalmology published here and abroad, editorials by prominent Ophthalmologists, society reports, and miscellaneous items of interest.

The Record particularly desires short practical papers on any subject connected with Ophthalmology. These will be published at as early a date as possible. It is understood that, unless otherwise arranged, original articles when accepted are contributed to the Record exclusively. Illustrative cuts will be made at the expense of the journal and proofs for correction will be sent to authors when desired. Reprints with covers are furnished at cost. One hundred of these will be presented to authors *gratis* when a request for them is written on the original manuscript. The Record will be issued monthly and each number will contain about 54 pages of reading matter.

Address all communications relating to Editorial Department to

T. A. WOODRUFF, M.D., Editorial Secretary,
1102 Reliance Bldg., Chicago.

Subscriptions and advertisements should be sent to the publisher, Suite 3, The High Bldg., Chicago, Ill., U. S. A.

TABLE OF CONTENTS.

I. ORIGINAL ARTICLES.

1. Blood Vessel Formation in the Vitreous, *by* **G. E. de Schweinitz, M.D.**, *Philadelphia, Pa.*, (*With Colored Frontispiece*) ---- 1
2. Keratectasia. Report of a Case with Transparent Cornea, *by* **Frank C. Todd, M.D.**, *Minneapolis, Minn.*, (*Illustrated*) ---- 3
3. Some Points in Retinoscopy, *by* **Helen Murphy, M.D.**, *Philadelphia* ---- 4
4. A Further Report on Holocaïn as a Local Anesthetic in Ophthalmic Work, *by* **H. V. Würdemann, M.D.** and **Nelson M. Black, M.D.**, *Milwaukee, Wis.* ---- 7
5. Three Facts and Two Theories as to the Laws of Direction, *by* **G. C. Savage, M.D.**, *Nashville, Tenn.*, (*Illustrated*) ---- 11
6. On Some Changes in Visual Sensations after Cataract Extraction and Especially Blue-Vision (Kyanopsia) *by* **Swan M. Burnett, M.D., Ph.D.**, *Washington, D. C.* ---- 17
7. An Improved Form of Stereoscope, *by* **Charles A. Oliver, A.M., M.D.**, *Philadelphia*, (*Illustrated*) ---- 22
8. Wolff's Operations for Congenital Ptosis—A Report, *by* **F. C. Hotz, M.D.**, *Chicago*, (*Illustrated*) ---- 24
9. Spontaneous Hemorrhage into the Orbit, *by* **Arthur J. Shaw, M.D.**, *Boston, Mass.* ---- 27
10. A Nystagmic Family, *by* **H. McI. Morton, M.S., M.D.**, *Minneapolis, Minn.*, (*Illustrated*) ---- 28
11. A Case of Transient Pulse of the Retinal Artery Induced by the Application of Homatropin, *by* **Geo. C. Harlan, M.D.**, *Philadelphia* ---- 31
12. Foreign Body of Unusual Size Retained Under the Retrotarsal Fold of the Upper Lid for a Period of Eight Months, *by* **Jno. W. Croskey, M.D.**, *Philadelphia*, (*Illustrated*) ---- 33

II. EDITORIALS.

1. Refraction Work as Done in Hospitals and Dispensaries ---- 34
2. The Oculist as a Witness in Court ---- 35
3. Common Sense *vs.* Muscle Clipping ---- 36

III. REPORTS OF SOCIETIES.

1. Section on Ophthalmology—College of Physicians, *Philadelphia* ---- 38
2. Chicago Ophthalmological and Otological Society ---- 43

IV. NEWS ITEMS.

Miscellaneous Items of Interest to the Profession ---- 52

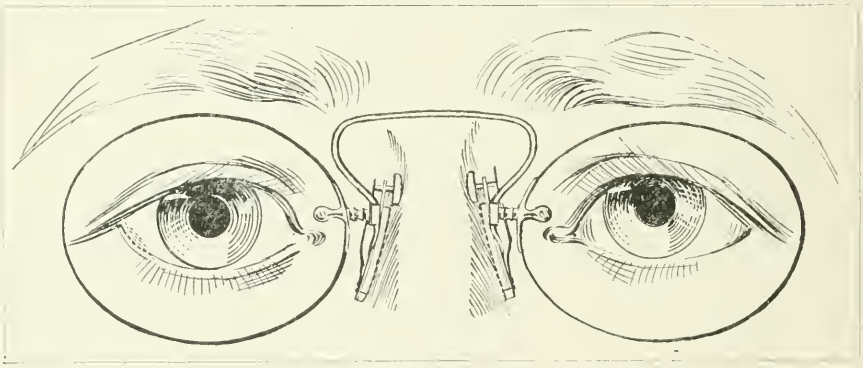
F. A. HARDY & CO.

WHOLESALE AND
MANUFACTURING

OPTICIANS

SILVERSMITH'S BLDG. 131–137 WABASH AVE. CHICAGO

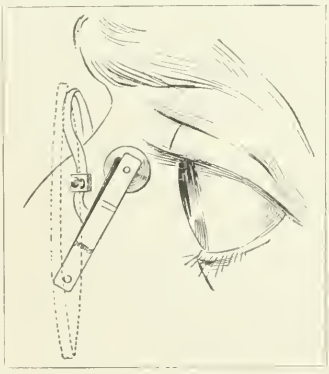
The Anatomical Eye-Glass



This Eye-Glass fits the nose automatically with very little adjusting. It affords the wearer more

Comfort and Security

than in any other Eye-Glass in the market. It enables an oculist to prescribe eye-glasses with certainty of success.



SEND TO US FOR SAMPLE AND
DESCRIPTIVE PAMPHLET

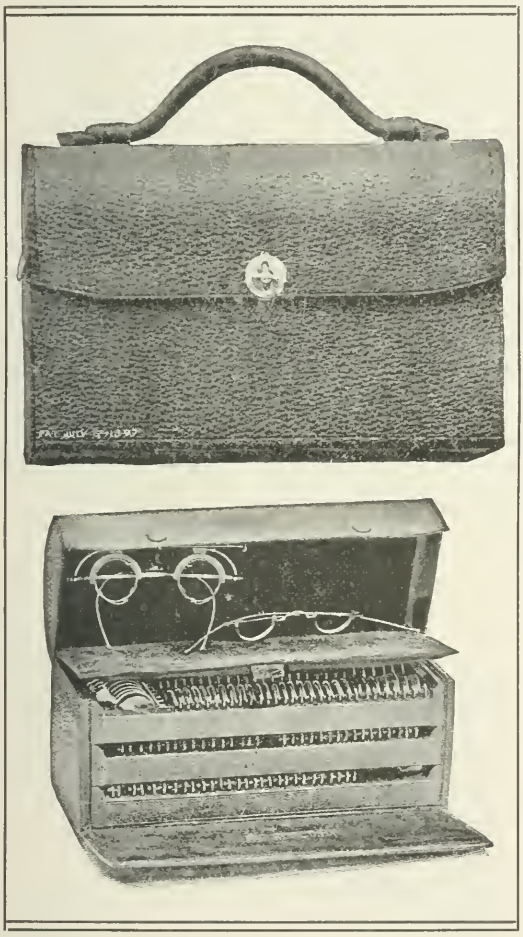
OCULISTS' PRESCRIPTIONS

Our Prescription Department is the largest and best equipped in the United States.

Our Work is Accurate, Prompt and Finely Finished. Send for Catalogue.

....The....

"Geneva Traveler"



Makes its first bow to the Trade as a new departure in the line of Trial Cases. It is a regular little gem, so to speak. Its strong points are compactness, completeness and practical usefulness. It consists of three removable trays, one of which contains spherical cvx. lenses, another contains spherical cve. lenses, and still another contains cylinder lenses color disks, and prisms. The flap contains space for trial frames, ophthalmoscope and retinoscope.

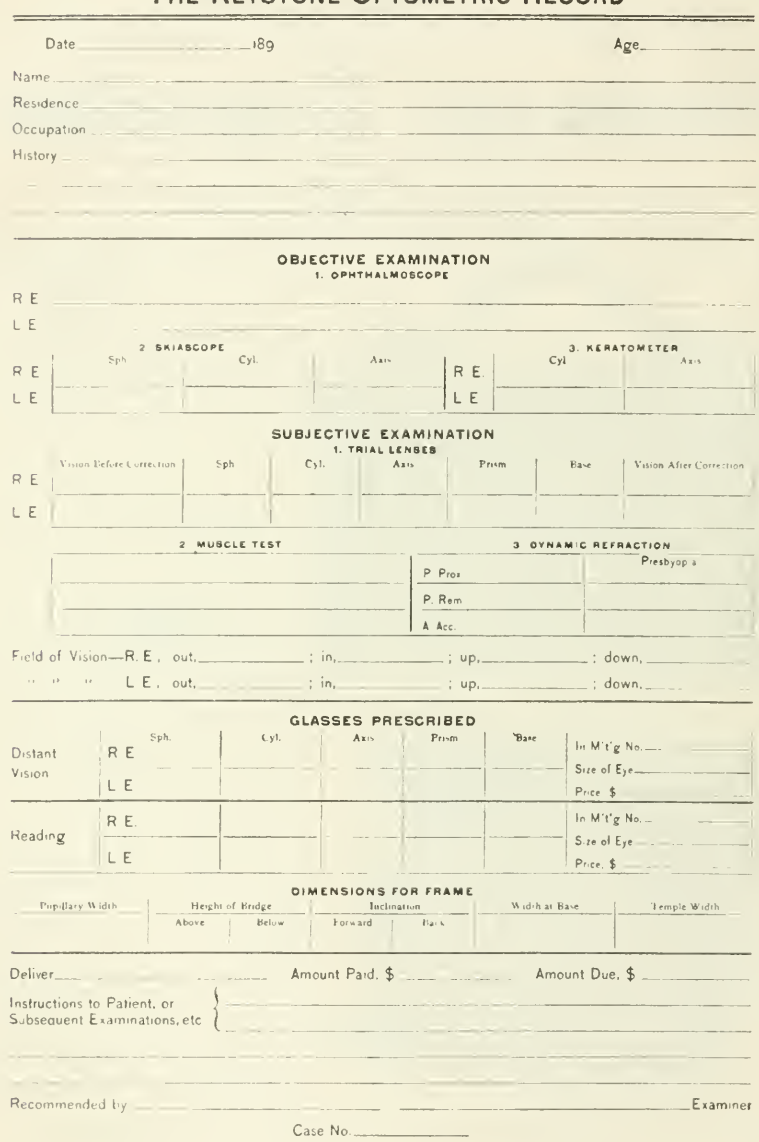
We are making this case in three sizes, to contain either 1⅛, 1¼ or 1½ inch lenses; price complete **$53,** less 6 per cent. for cash. The price of this case empty is **$15,** less 6 per cent for cash.

Geneva Optical Co.

167 Washington Street

CHICAGO

To Record Eye Examinations.



THE KEYSTONE OPTOMETRIC RECORD

Date _____ 189 Age _____

Name _____

Residence _____

Occupation _____

History _____

OBJECTIVE EXAMINATION

1. OPHTHALMOSCOPE

R E _____

L E _____

2 SKIASCOPE

	Sph	Cyl.	Axis
R E			
L E			

3. KERATOMETER

	Cyl	Axis
R E.		
L E		

SUBJECTIVE EXAMINATION

1. TRIAL LENSES

	Vision Before Correction	Sph	Cyl.	Axis	Prism	Base	Vision After Correction
R E							
L E							

2 MUSCLE TEST

3 DYNAMIC REFRACTION

	Presbyopia
P. Prox	
P. Rem.	
A Acc.	

Field of Vision—R. E., out, _____ ; in, _____ ; up, _____ ; down, _____

" " " L. E., out, _____ ; in, _____ ; up, _____ ; down, _____

GLASSES PRESCRIBED

		Sph.	Cyl.	Axis	Prism	Base	
Distant Vision	R E						In M't'g No.
	L E						Size of Eye
							Price $
Reading	R E.						In M't'g No.
	L E						Size of Eye
							Price $

DIMENSIONS FOR FRAME

Pupillary Width	Height of Bridge		Inclination		Width at Base	Temple Width
	Above	Below	Forward	Back		

Deliver _____ Amount Paid, $ _____ Amount Due, $ _____

Instructions to Patient, or Subsequent Examinations, etc _____

Recommended by _____ Examiner

Case No. _____

The above is a facsimile of a page of the **Keystone Record Book of Optometric Examinations.** The book is 11 x 8 inches, handsomely bound in cloth. It contains 200 record forms and has an index to facilitate reference. It has been pronounced by oculists the best arranged, most serviceable, and lowest priced book of its kind.

Sent prepaid on receipt of **$1.00.**

THE KEYSTONE,

19th and Brown Streets, Philadelphia, Pa.

When writing please mention the Ophthalmic Record.

Columbia
BICYCLES
STANDARD OF THE WORLD
HARTFORDS
SECOND ONLY TO
COLUMBIAS
BEATS THE EARTH
1897 Columbias
Set the Pace for the
World in
Beauty, Strength
and Speed.
1897 MODELS
$75 to all alike.
HARTFORD BICYCLES,
$50, $45, $40.
POPE MFG. CO.,
Hartford, Conn.
If Columbias are not properly represented in your vicinity, let us know.

LISTERINE IN Ophthalmology and Otology

The same satisfactory results following the use of LISTERINE in all sub-acute and chronic inflammations of mucous membrane (whether urethral, vaginal, nasal, or pharyngeal) is attained by its *judicious* employment upon the more sensitive surfaces of the eye and ear.

The presence of pus, and succulent appearance of an abraded surface, with tendency to capillary hæmorrhage, are certain indications for LISTERINE, which has been pronounced, by an authority in the treatment of these affections, "A balsamic astringent without a rival."

LISTERINE IN Rhinology and Laryngology

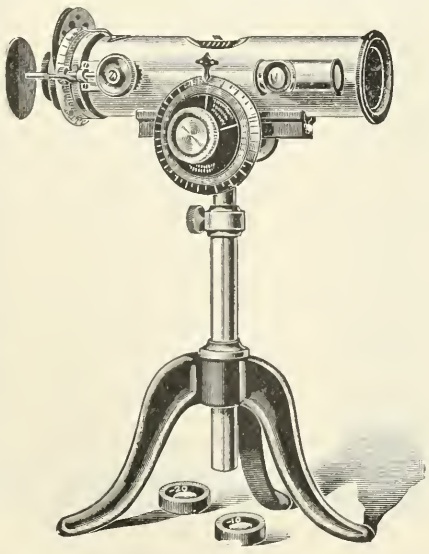
In the treatment of Chronic Nasal Catarrh, and the varied affections of the Nose, Throat, and Lungs, the advantages of LISTERINE are such that it has superseded many of the oldest and most popular remedies. With its certain antiseptic and prompt deodorant properties, it combines a mild stimulating influence (easily graded by dilution free from irritating effect. Applied by means of spray to those surfaces which are accessible, it quickly loosens tenacious mucus secretions, and the boracic acid, being in perfect solution, is readily conveyed to, and deposited upon, the innermost recesses of the air passages.

DESCRIPTIVE LITERATURE UPON REQUEST.

Lambert Pharmacal Company, St. Louis.

LISTERINE is kept in Stock by the leading dealers in Drugs and Medicines throughout the World.

...De Zeng's Refractometer...



This instrument is a scientific apparatus designed for the quick and accurate measurements of refractive errors both manifest and latent, without the assistance of mydriatics.

With it astigmatism when present is found and measured in a moment, and cases having low visual acuity are readily determined, owing to the Refractometer's high amplification. While the instrument is yet new it has won the strongest endorsements from those who are using it, and we solicit your correspondence that we may forward descriptive matter, testimonials, and prices, also a chromolithograph of the latest model of the Refractometer in full size and finish.

Used and Endorsed by the Leading Eye Specialists, Ophthalmic Hospitals, and by the United States Army.

CATARACT OPTICAL CO.

357-365 Seventh St., Buffalo, N. Y.

BINNER ENG CO CHI

VASCULAR NEW FORMATIONS IN THE VITREOUS. - - De SCHWEINITZ.

THE

OPHTHALMIC RECORD

A MONTHLY REVIEW OF THE PROGRESS OF OPHTHALMOLOGY.

VOLUME VII. CHICAGO, JANUARY, 1898. NO. 1. NEW SERIES

ORIGINAL ARTICLES.

BLOOD VESSEL FORMATION IN THE VITREOUS.

BY G. E. DE SCHWEINITZ, A. M., M. D.,

OF PHILADELPHIA.

(With colored frontispiece.)

Blood vessel formation in the vitreous in front of the entrance of the optic nerve is an occasionally encountered, striking ophthalmoscopic picture. Only a few vessels may be present, or the entire disc, as in a case reported by Dr. Harlan, may be obscured by a congeries of contorted vessels, the whole forming an extensive vascular veil of anastomosing capillaries, coming directly from the nerve-head and having no connection with the retinal vessels.

In the disease called proliferating retinitis, in which a tissue of bluish-white color develops from the retina and stretches out into the vitreous humor, the masses may follow the course of the blood vessels, which in part lie beneath them and in part pass over them. Those vessels which lie above the masses are occasionally newly formed blood vessels.

Somewhat partaking of the nature of such cases is the following:

J. D. B., a man aged twenty-six, born in North Carolina, single, clerk, consulted me on the 28th of July, 1897, complaining of pain in and around the left eye.

History.—With the exception of measles in childhood, the patient has not suffered with any illness severe enough to confine him to bed. In December, 1895, he is said to have contracted syphilis, and has been under treatment ever since. His physician, however, has failed to observe secondary symptoms in the skin or mucous membranes, and thinks that what was supposed to be the initial lesion of syphilis was a herpetic bleb on the prepuce. Both parents are living

and in good health. Two brothers are alive and healthy. One brother died from heart disease and another from typhoid fever. The pain in the left eye, which caused him to seek advice, began eighteen months before his visit, and has continued ever since in spite of treatment which has included both medicinal and optical therapeutics.

Examination.—The patient is a tall, apparently healthy, man, and physical examination failed to reveal the signs of any disease, save those connected with his eyes.

Eyes.—V. of R. E., after the correction of one dioptre of hypermetropia, $\frac{6}{6}$. The media are clear; the disc is a vertical oval, of good color, with slight broadening of the scleral ring on the temporal side, and beyond this a slight choroidal crescent. The arteries are normal in size, and the veins somewhat fuller than normal. Both sets of vessels carry blood of natural tint. No retinal or choroidal lesions are present.

V. of L. E., after the correction of a quarter of a dioptre of astigmatism, axis 150, $\frac{6}{6}$. The optic disc is a vertical oval, of somewhat pallid color, and springing from it there is a greenish-white mass of the type usually seen in proliferating retinitis, which carries a veil of anastomosing bloodvessels, and terminates in several clump-like dark bodies, one extending forward into the vitreous 7 dioptres. Similar patches of greenish-white connective tissue are visible above the disc, above the macula, and downward and inward along the course of the inferior nasal vessels and directly downward below the disc. These masses vary in prominence in the vitreous, the surface of that above the disc being + 6 D., of that above the macula + 7 D., of that below the disc between 5 and 6 D., and of that in the lower nasal fundus between 3 and 4 D. In immediate connection with the patch above the disc is an area of retino-choroiditis, and some of the blood vessels can be traced directly to this patch. No direct connection with the fundus could be seen in the other masses. Directly in the macula are a few faint lines, such as are usually produced by slight œdema. The vitreous is perfectly clear, and the function of the eye seems normal, as none of the masses obscure the macular region, and the slight lines of œdema appear not to influence the visual acuity of the eye. The accompanying frontispiece, reproduced from a water-color by Miss Margaretta Washington, gives a very fair idea of these lesions.

The *treatment* consisted of iodide of potassium and bichloride of mercury, and the correcting lenses as recorded were ordered. The patient has not been seen since the first week in August.

Appearances such as these are usually ascribed to repeated hemorrhages. Recently, Weeks has examined an eye with proliferating retinitis and his findings (published in the *New York Eye and Ear Infirmary Reports*) throw light upon the formation of new blood-vessels. The membranes, he believes, are "organized clots, which, before organization, may be fibrin only, or fibrin and blood corpuscles. The process which determines the production of the membranes appears to be as follows: Partial obstruction to the arterial circulation from the arterial fibrosis, to the venous circulation from the sluggish blood current and in small de-

gree from fibrous degeneration of the walls of the veins, occasions venous engorgement at favorable points, a distension of the veins, with tortuosities and, perhaps, new-formed venules. Later a transudation of the fluid and fibrin-forming elements into the vitreous takes place which may extend to some distance from the retina. Some hemorrhage may take place at the point from which the fibrinous exudation has proceeded. Formative cells are projected into this layer of fibrin or blood clot, and thin-walled blood-vessels and fibrous tissue result. Hemorrhage occurs from the vessels which are formed in the new membrane, probably much more frequently than from the remaining vessels in the retina."*

*A still more recent study of Retinitis Proliferans has been published by Dr. Weeks in the Tran. Amer. Ophth. Soc. 1897, Vol. viii, p. 158. For full particulars of this affection, the reader is referred to this admirable paper.

KERATECTASIA, REPORT OF A CASE WITH TRANSPARENT CORNEA.

BY FRANK C. TODD, M. D.

Instructor in Ophthalmology and Otology in the Medical Department of the University of Minnesota.

MINNEAPOLIS, MINN.

A comprehensive description of ectasiæ of the cornea is given in Fuchs. He classifies ectasiæ as follows:

Ectasiæ of inflammatory origin— { Staphyloma, Keratectasia.

Ectasiæ of non-inflammatory origin— { Keratoconus, Keratoglobus.

STAPHYLOMA is defined as "a protuberant cicatrix originating in a prolapse of the iris, and wholly or in part replacing the cornea."

KERATECTASIA *is "a protrusion of the cornea which makes its appearance after inflammation of the latter, without, however, any perforation having taken place.** The protrusion, therefore, in this case consists of corneal tissue, in contradistinction to staphylomata, in which it is formed of the tissue of the iris. From ectasiæ of the cornea of non-inflammatory origin —i. e., Keratoconus and Keratoglobus—the inflammatory ectasia is distinguished by the fact that the bulging portion of the cornea, in consequence of the inflammation, *is opaque."** Definitions given by other authorities are essentially the same, all stating that ectasiæ of inflammatory origin are opaque.

* Italics mine.

The case which I have to report is, therefore, unique in that it is of inflammatory origin, not a staphyloma, and is transparent. It is, therefore, a case of *Keratectasia not opaque.*

Mr. K., aged 60, sustained an injury to his eyes while in battle in 1861. A gun was discharged very close to them. An inflammatory re-action followed, involving the corneæ and irides, leaving in its train posterior synechia and changes in the shape and appearance of the corneæ. It does not appear from the history that the immediate inflammatory reaction involved the posterior portions of the globes, for the patient retained useful vision for twenty years, though repeated exacerbations followed, and his vision gradually decreased until he became totally blind in the left eye, and the vision in the right eye was reduced to shadows. Portions of the left cornea are opaque over the pupil and inferiorly, but the major part is transparent. The pupil is contracted and iris bound down by posterior synechia. Fundus could not be seen. Right eye (shown in illustration) same as left, but *cornea entirely transparent.* Ophthalmoscopy shows extensive choroidal atrophy, no field being clear, with atrophy of the optic nerve.

As may be imagined, the patient presented a ghastly appearance. The corneæ drooped out of the lids like two pouches distended with water, and were fastened above to the scleræ, and supported beneath by the lower lids.

No. 602 Nicollet Ave.

SOME POINTS IN RETINOSCOPY.

BY HELEN MURPHY, M. D.

Instructor in Diseases of Eye in Philadelphia Policlinic.

PHILADELPHIA.

The average student of retinoscopy seems to be sublimely indifferent to the fact that it is a science, as well as an art. In fact, few seem to realize at all that it is a science, and a complicated one, but imagine, when they have mastered a few simple rules as to its application, and have cultivated their light-sense up to the point of differentiating between the central and peripheral area of illumination, that they have exhausted the subject. But, the fact that the optics of the test is not studied and understood as it should be, often leads to confusion and inexactness in the application of the rules, and sometimes to very absurd blunders.

Because exact rules are given as to the proper position of the original source of light, an impression seems to have been created, in a great many students' and practitioners' minds, that the refractive appearances of the eye under observation are affected by this position; that is, that the direction of the rays proceeding from the illuminated eye depends on the

RIGHT EYE—SHOWING KERATECTASIA, WITH TRANSPARENT CORNEA.

amount of divergence or convergence of rays entering the same. A recent contributor to an ophthalmological journal left his readers to infer that, by moving his source of light one meter farther from his patient's eye, he could bring the point of reversal for that eye one meter closer, and actually devised an elaborate apparatus for the purpose of performing this impossible feat. The error is one so common it is well to say a few words to do away with it. Those who make it imagine the area of illumination which we study is an image of the source of light projected on the retina as on a screen, and returned to the dioptric apparatus by the laws of regular reflection. That the retina does sometimes act as a screen reflecting back the illuminating object, is seen with especial plainness in ophthalmoscopy, where an image of the gas jet is often observed interfering more or less with the study of the fundus. But, as in ophthalmoscopy, it is not an accidental image, but the fundus which we wish to study, so it is in retinoscopy. Our object in using the mirror is to illuminate the eye-ground. The retina, not being a polished surface, we see it as we do all objects by *irregularly* reflected or diffused light, and it is on the relation of this illuminated object to the focal point of the dioptric media that the refractive appearances of the eye depend. If the observer sits one meter in front of an emmetropic eye, with the light close to the mirror, it will require a one diopter convex lens to focus the parallel rays from that eye on his own retina. The rays from the mirror —if a plane one is used—having a divergence of one diopter, will be focused by the lens at the same time on the retina of the observed eye. If the light is moved four meters back from the observed eye, so that the rays traverse six meters before entering the same, and are, therefore, practically parallel, yet it will still require the same one diopter lens to focus them on the observer's eye; and at the moment they are focused on the observer's eye they are thrown out of focus on the observed eye. And yet the only difference in the appearance in the two cases is that in the first the area of illumination appears slightly smaller, brighter, and more clearly defined. The point at which all movement ceases is exactly the same in both.

The apparent size of the area of retinal illumination is not directly related to its actual size in the observed eye, but to the size of its image in the observer's eye. This is shown by case number two above, where the one diopter lens, by focusing in the vitreous of the observed eye enlarged the area of retinal illumination by diffusion circles, while at the same time reducing its apparent size to a minimum by focusing the returning rays on the observer's retina. The apparent size is subjective, and is

based on the law that the distance of two objects being known to be the same, their size is estimated from the size of the retinal image, and in perfect focusing this image impinges on the smallest possible number of rods and cones. In other words, a large object perfectly focused appears smaller than a small object imperfectly focused. Of course, when conditions are parallel, the size of the image holds a direct ratio to the size of the object. It is only in astigmatism that very exact focusing of the light on the patient's retina assumes much importance in this condition, giving, as Dr. Jackson has shown in "Skiascopy," a more distinct boundary line between illumination and so-called "shadow" along the edge of the astigmatic band, and thus making the direction of the axis more apparent.

That the apparent size of the area of illumination in the observed eye is dependent upon the number of rods and cones stimulated in the observer's eye, is shown in a different way in spherical aberration, where this element in the estimation of size neutralizes the magnifying power of the observer's eye. According to the laws governing the projection of vertical images, the largest image of the observed fundus should be obtained with the eye at the point of reversal, while in reality the area of retinal illumination seems to grow smaller and smaller as this point is approached, while the illumination in that part of the pupil whose focal point is being receded from grows proportionately larger.

Because perfect focusing of the light on the patient's retina is not important, except in cases of astigmatism, it does not follow that the position of the light in relation to the mirror is a matter of indifference in cases of simple myopia and hypermetropia, for the intensity of the illumination depends on the distance of the light from the mirror, and the amount of obliquity with which the rays strike its surface. This is especially noticeable when sitting close to the observed eye, where variations can be more easily noted. With the mirror half a meter in front of the patient, and the light too obliquely placed, there will be practically no illumination of the patient's visual zone, since it will be occupied by the non- or almost non-reflecting area (according as to whether a Thorington or other plane mirror is used) in the sight-hole of the retinoscope. With the light close, and the maximum number of rays striking the mirror's surface as perpendicularly as possible, there is an almost uniform illumination, and to the beginner especially the brightness of the reflex is a matter of first importance.

A FURTHER REPORT ON HOLOCAÏN AS A LOCAL ANESTHETIC IN OPHTHALMIC WORK.*

BY H. V. WÜRDEMANN, M. D., AND NELSON M. BLACK, M. D.,
OF MILWAUKEE.

September 15, 1897, we reported[6] two months experience with the new local anesthetic, holocaïn, a synthetic alkaloid introduced by Tauber[3] derived from the p-Phenetidin series, which had been used for operations of all characters upon the eye and before electrical or irritating medical applications. Since the above report we have used this anesthetic several hundred times for various purposes and have studied its action in comparison with that of cocain and eucain.

Satisfactory local anesthesia may be obtained by any of these three, but on account of the severe irritation produced by eucain its use has been given up. Other recently brought forward chemical products will cause local anesthesia. The modification of eucain called eucain B. is vouched for by its introducer[5] to possess all the advantages and none of the irritant qualities of eucain. The latest candidate is anesin[4] which seems to afford less anesthesia than the others, although it is non-irritant. Eucain B. and anesin have not yet been tried in our practice.

Holocaïn possesses some practical advantages over cocain with which we more particularly wish to compare it. First, is the rapidity and completeness with which it produces anesthesia and the length of time which this condition obtains. Anesthesia of the cornea is produced in fifteen seconds after one application of one drop of a one per cent solution and lasts for ten minutes and upwards. For operation, however, upon the cornea it is advisable to drop in the solution at least three times at minute intervals when its anesthetic effect lasts about twenty minutes. On account of the rapidity of its action, no time is lost in producing anesthesia. One has to wait ten to twelve minutes for the beginning of full anesthesia by cocain. We have found that anesthesia of the cornea is quite as complete as that from cocain. Anesthesia of the iris is likewise produced, a factor which does not obtain in cocain anesthesia in cases where the tension of the eye is greatly increased, as in glaucoma. Anesthesia seems to be indefinitely prolonged by repetition of the solution;

*Read before the Chicago Ophthalmological and Otological Society, December 14, 1897.

this is not the case with cocain. By one drop in the eye of the one per cent solution the feeling of irritation produced is about the same as that from five per cent cocain solution. There may be a slight disadvantage from the fact that the eye is somewhat congested by holocaïn, but we have no complaints therefrom. The congestion passes off within an hour.

Our operations for tenotomy and advancement under holocaïn have been quite as satisfactory as with cocain. We drop in the holocaïn solution at more frequent intervals in these muscle operations than has been our habit for cocain anesthesia, applying it five or more times during the course of the operation; after the conjunctiva has been opened dropping it in the wound, repeating after incision in the tendon has been effected. For advancement we have sometimes used a two per cent solution. The accommodation not being affected by holocaïn as by cocain perhaps allows of more exact measurement of the muscular imbalance during the stages of operation for heterophoria as the relation of accommodation to convergence is thus not disturbed.

We believe that absorption of the drug is more thorough than in the case of cocain, for after the first instillation of the latter the effect of its action in constricting the blood vessels renders absorption less. Thus the deeper structures such as the iris are more thoroughly anesthetized by simple dropping of the solution upon the cornea. However, in muscle operations and in pterygia the tendency to more free hemorrhage under holocaïn, which is certainly disadvantageous on account of impeding the operator's view, also seems to diminish the anesthesia, but by frequent use of the holocaïn solution as above noted, the anesthesia is readily maintained. The duration of the full anesthesia produced by holocaïn is a little longer than that from cocain, being about ten minutes for the latter and about doubled by the former. Absorption by inflamed surfaces such as the inflamed conjunctiva of granular conjunctivitis and in glaucoma seems more ready than in the case of cocain.

The cornea does not desiccate and is always moist with holocaïn, eucain and eucain B., due to vasomotor dilatation and the transudation thereby produced. The danger of epithelial desquamation from drying of the cornea under cocain is not to be disregarded and in some cases the vaso-motor constriction must certainly unfavorably influence the nutrition of the tissues and the course of healing. Necrosis has been reported a number of times after hypodermatic injection of cocain solutions. By this reason cocain is contraindicated in ulcer of the cornea for the relief of pain. Holocaïn or the two eucains, however, are useful not only on account of their anesthetic qualities, but they are likewise antiseptic and their effect upon the blood vessels seems to stimulate the healing process.

Neither the pupil nor accommodation are affected by holocaïn which renders it especially useful before applying irritating medicines or removal of small foreign bodies, as no unpleasant blurring of vision or dilatation of the pupil, as produced by cocain, is noticed. The intraocular tension is not increased.

The stability and bactericidal qualities of holocaïn solutions are of minor importance but are valuable. The solutions are not only sterile but are antiseptic. They are not affected by boiling in porcelain.

There has been a decided rise in prices since the new tariff has gone into effect. The following are those current in Merck's report of December 1, 1897:

Cocain hydrochlorat	$3.50	per oz. (used in five per cent sol.)
Cocain alkaloid	4.55	" " " " " " " "
Eucain	3.50	" " " " " " " "
Eucain B.	3.50	" " " " " " " "
Holocaïn	12.80	" " " " one " " "

Although by the ounce holocaïn is at present the most expensive, yet when it is considered that one ounce goes five times as far as an ounce of any of the other drugs, the comparative price would be $2.56, much less than the others. In these commercial days this may be a factor of considerable importance in popularizing its use. The laws of supply and demand will tend to reduce the price of holocaïn should it prove as useful as it now promises.

We have used it for local anesthesia in the following cases:

Six cataract (simple) extractions.
Three cataract extractions with iridectomies.
Four cataract discissions.
An opening of pupillary membrane with keratome and scissors.
One removal of traumatic cataract and of steel in lens by magnet and incision.
Six iridectomies.
Eleven tenotomies.
Three tenotomies with advancement.
Six canaliculotomies.
Six chalazia.
One sarcoma of conjunctival limbus.
One pterygium.
One curettement of corneal ulcer.
Two cauterizations of corneal ulcer.
A number of foreign bodies in conjunctiva and cornea.
As an instillation before use of irritating medicines such as

silver, blue stone, alum, iodin, etc., and direct application of electrode to corneal and conjunctival surfaces.

Other operations have been done under cocain anesthesia. In one case where extraction of cataract was done on both eyes at separate times, holocaïn was used for the first eye and cocain for the second. It happened that during the second operation the patient complained of pain and afterwards suffered from extensive prolapse of the iris. This, however, is certainly not to be ascribed to the cocain. In several operations for squint one eye was operated upon under holocaïn anesthesia and the other under cocain anesthesia. A large number of contrast experiments were made before the application of irritating medicines.

The anesthetic qualities of holocaïn are equal to those of cocain and it is no more irritant. Holocaïn excels cocain for operations upon the bulb in the following:

Its action is quicker and more lasting.

It more thoroughly anesthetizes the iris and deeper structures.

It more thoroughly anesthetizes inflamed surfaces.

The anesthesia may be indefinitely prolonged.

The cornea does not desiccate under its use.

It does not affect the tension.

It does not act on the pupil or accommodation.

It does not interfere with the nutrition of the tissues but rather increases their blood supply and hastens healing.

Its solutions are antiseptic.

It is already proportionately cheaper.

The only disadvantage in the substitution of holocaïn for cocain for anesthetic purposes is that bleeding is more free under holocaïn, but the resulting blood clot, for instance in muscle operations, is no greater and is as speedily absorbed. Cocain is likewise a cycloplegic and mydriatic and its power to diminish congestion has a distinct therapeutic indication.

Although holocaïn has been found by us to possess these distinct advantages over cocain when applied as a pure anesthetic, it has not and probably will not entirely displace the older medicament. We are not enthusiastic over its effect, but have made a rather extensive trial of the drug in an attempt to prove the claims of Tauber and others who have recently filled the pages of the European medical press with the results of their investigations. Only one author[1] ascribes any ill effect to its use, and his conclusions may be received with doubt. Hotz[2] has observed that penetration is not as deep but he has only experimented with a single solution of one per cent strength. In our practice no toxic effects have been ob-

served from holocaïn, and indeed although we have also used many ounces of cocain during the past dozen years we have seldom seen any effect upon the system and believe that both those drugs are safe when properly used.

128 Wisconsin St.

REFERENCES.

[1]Bock, Emil, "Ein Fall von schädlicher Wirkung des Holocaïn." (Centrb f. prakt. Augenhkde., Sept., 1897.)

[2]Hotz, F. C., "Holocaïn vs. Cocain." (Journ. A. M. A., Nov. 13, 1897.)

[3]Tauber, E., "Holocaïn." (Centralbl. f. prakt. Augenhkde., Feb., 1897.)

[4]Vamossy, V., "Anesin." (Deut. Med. Woch., Sept. 2, 1897.)

[5]Vinci, C., "Eucain B." (Archiv. f. path. Anat. u. Phys. u. f. Klin. Med., Bd. 149, Heft 2, 1897.)

[6]Würdemann, H. V. & Black, N. M. "Report on Holocaïn as Local Anesthetic in Ophthalmic Work." (Ophthalmic Record, Oct., 1897.) For this, see literature to Sept. 15, 1897.

THREE FACTS AND TWO THEORIES AS TO THE LAW OF DIRECTION.

BY G. C. SAVAGE, M. D.

Professor of Ophthalmology Medical Department of Vanderbilt University.

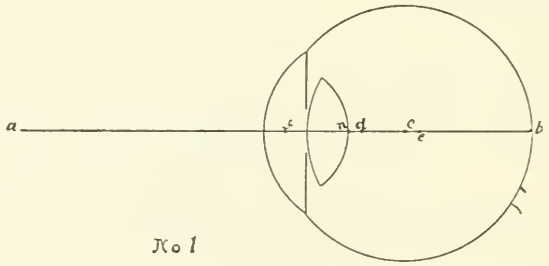
NASHVILLE, TENN.

Illustrated.

The law determining the direction of things seen is as old as the first eye created, and is as unalterable as are any of the natural laws governing the universe. Prior to, and even far within, the present century all the phenomena of vision were vaguely understood, and most of them were relegated to the then dark domain of psychology. It was taught that ideas of direction were only the result of experience acquired in infancy and childhood; and there was much speculation as to whether a little child saw objects erect or inverted. Notwithstanding ignorance of the law, the perfect eyes of men and beasts and birds saw things in their proper direction in space, in obedience to the law. All natural laws were instituted by divinity in the beginning, and whether man has known about them or not, they have been continuously in operation. Before Newton discovered the law of gravitation, bodies above the surface of the earth, heavier than the atmosphere, having lost their support, were drawn toward its center. The falling of the apple was the fact that led Newton to evolve his theory of gravitation, which will stand for all time, supported by many facts and opposed by none.

There are now two theories touching the law of direction. Although the two do not very widely differ, one must be false. If each is unsupported by facts, neither can be true, and another would have to be evolved. These theories are, in order of age, first: "Every line of direction is an axial ray of a cone of light, these all crossing at the nodal point of the eye" (Helmholtz); second, "Every line of direction is a radius of retinal curvature prolonged" (Savage). The three facts refuting the one theory and establishing the other, are: first, the temporal field of vision is 90°, in some cases more; second, objects not on the visual axis are not always where they seem to be; third, the character of the image of a house, taken at an angle of 45°, as shown by photography, contrasted with the real appearance of the house as seen by the eye.

The accompanying diagrams are necessary for a clear presentation of

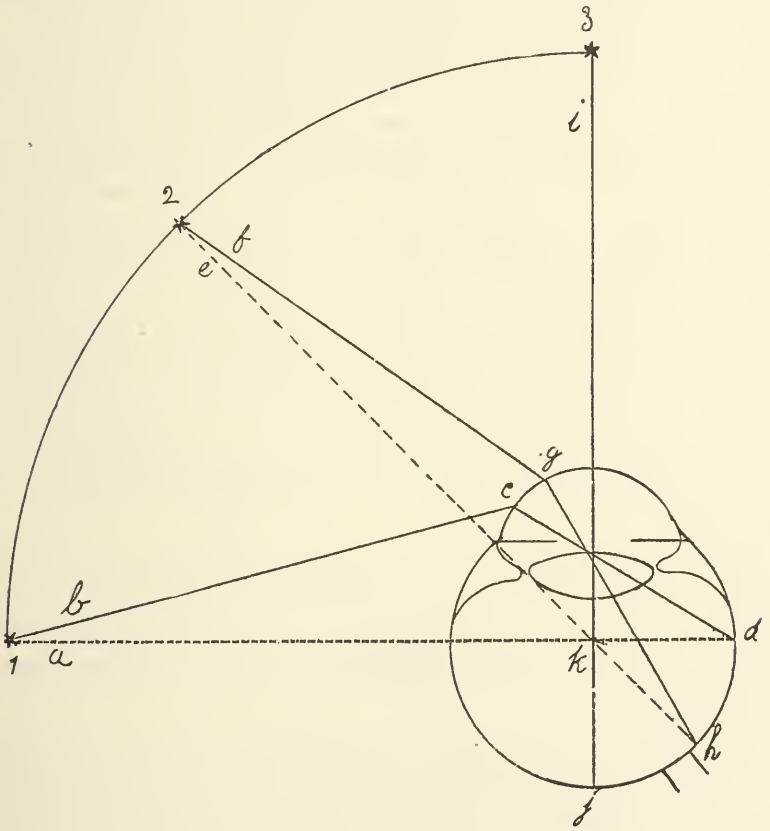


No 1

these facts. Diagram 1 is approximately a correct representation of the perfect human eye. It shows the refractive media, the iris with its pupillary opening, and the visual axis (*a-b*), on which is located the centers of all the curvatures of the eye. At *c* we have the center of retinal curvature; at *d* the center of corneal curvature; at *e* the center of curvature of the anterior surface of the lens, and at *f* the center of curvature of the posterior lens surface. The nodal point is also on this line, and is situated in advance of the center of corneal curvature at *n*, in the posterior part of the lens. This line, the visual axis in the perfect eye, begins at the macula, *b*, the most acute part of the retina, and, passing through the centers of all curvatures, must be coincident with a radius of curvature of each. The object seen most acutely must be on this line; and it is clear that the axial ray of light from the fixed point of this object passes into the eye and reaches the retina without refraction anywhere. Either the nodal point is wrongly located or all other axial rays must fall to the outer side of the radii of curvature for all other corneal points, and therefore must undergo refraction; and the bend must always be such

as to make each of these rays cross the visual axis anterior to the center of corneal curvature.

Diagram two shows that it is not true that all these rays cross the line of vision at the nodal point. The axial rays, from objects in space, located near the visual axis, do cross it at the nodal point, but those from objects further out in the field of vision cross the axis in advance of the nodal



point, and the further removed the object, the more advanced is the point of crossing. This diagram represents a spacial curve, 1–2–3, which has a common center with the retinal curve, *d–h–j*. Three objects are on this spacial curve, one immediately in front of the eye, one at 45° and the other at 90°. The axial ray, *i–j*, from the point 3, is unrefracted in its course to the retina; the ray, *f–g*, from the next object is refracted, and crosses the visual axis well within the lens, and the ray, *b–c*, from the

object at 90° is so refracted that it crosses the axis of vision still nearer the anterior surface of the lens.* Thus it is clear that the axial rays do not cross the visual axis at a common point; and this, of itself, goes far towards disproving the theory that claims axial rays as lines of direction.

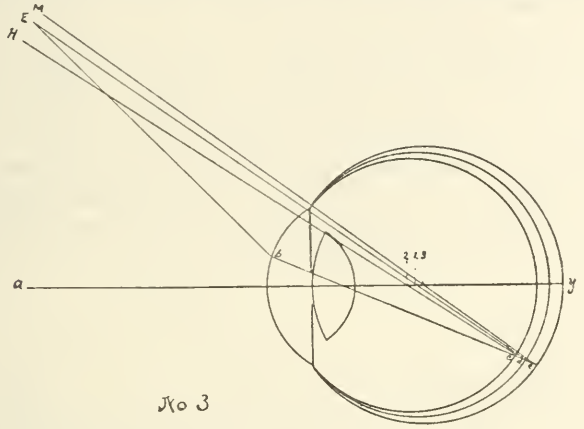
Again, diagram 2 will help in the presentation of the fact that the temporal field of vision is 90°, and in some cases fully 100°. Everything seen must send light into the eye through the pupillary opening, and this light must make its impress on some part of the retina. The retinal excitation thus effected must be carried to the brain by means of optic nerve fibres. At once the mind sees the source of the light in some direction in space, in obedience to a law. The source of the light and the point of the retina excited can be connected by a straight line, and that line must be the line of direction. The spacial curve and the retinal curve being concentric circles, point for point can be connected only by a line that passes through the common center, *k*, and that line must be a radius of retinal curvature prolonged. An object at 90° to the visual axis cannot send light into the eye coincident with this line, for it passes through opaque structures on its way out. The light coming from the object at 1 must go to the cornea, be there refracted so as to enter the pupil and then pass on to the retina. If the part of this axial ray within the eye is to be a part of the line of direction, it must be prolonged from the cornea out into space, and on it the source of light must appear to be. The object, although actually at 90° with the visual axis, would appear to be at 60°.

The axial-ray theory of direction comes in deadly conflict with the fact that the temporal field of vision is 90°. The retinal-radius theory is confirmed by this fact, for the line, *d–a*, connecting image and object, is a radius of retinal curvature prolonged, and the object is, in reality, where it appears to be.

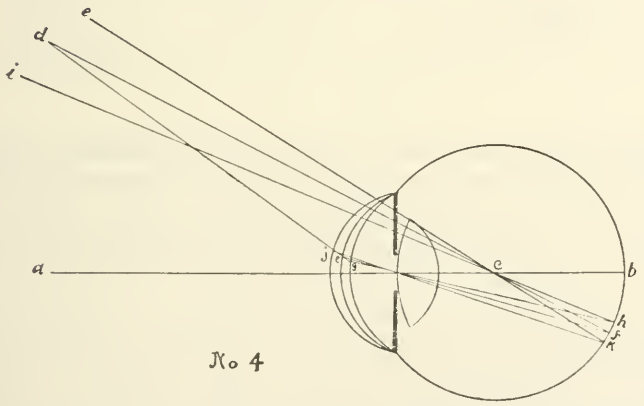
The second fact disproving the one theory and confirming the other, is: objects not on the visual axis, *ay*, (Fig. 3) are not always where they seem to be. Perfect eyes always see all objects in the correct direction; hyperopic eyes always see objects, not situated on the visual axis, between the real object and this axis; myopic eyes always see objects, not on the visual axis, to the outer side of the position occupied by the real object (Dunn). The emmetrope, the hyperope, and the myope all see the object whose image is on the macula in its proper direction in space. A representative of each of these classes, placed by a black-board, but within easy reach of it, and his visual axis parallel with the board, would see a dot, made

*For clearness, the refraction is represented as taking place only at the corneal surface.

approximately at an angle of 45°, in a definite direction. If the emmetrope is given a piece of chalk and is asked to quickly make a mark through the dot E his stroke will come down through it; the hyperope's stroke would miss it in front at H; the myope's stroke would fall behind it at M. If the axial-ray theory is correct no one could see objects, not on the



No 3

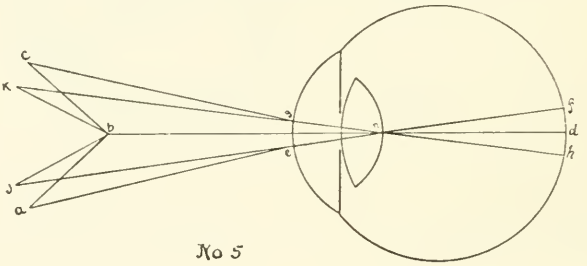


No 4

visual axis, in the right direction; but all would see them displaced towards the visual axis. The facts illustrated in diagram 3 prove the retinal-radius theory to be true, and the axial-ray theory false. Diagram 3 represents the two visual errors as axial, while diagram 4 represents them as refractive; but in either case the same truth is made manifest.

The third fact is illustrated in diagrams 5 and 6. A photograph of

a house, taken at an angle of 45°, clearly shows the front and the exposed side so related as to form an acute angle. Why this right angle appears as an acute angle can be easily explained by means of diagram 5. To the human eye, related to the building just as the camera was, no such distortion would occur, and yet the image on the retina would be like the image on the sensitive plate of the camera. To the perfect eye the corner would be a rectangle; to the far-sighted eye, for the reason already given, the angle would be a little less than a right angle; while to the near-sighted eye it would appear to be a little more than a right angle. Diagram 6 offers a full explanation for the fact that a perfect eye, looking at a building at an angle of 45°, will see the two walls united at a right angle. In diagram 5, the figure *abc*, a right angle, is intended to represent the corner of a house immediately in front of the eye. The ray of light from the corner, *b*, enters the eye and passes on to the retina at *d*



No 5

unrefracted; the ray of light from *a* strikes the cornea at *e* and is bent from its course and passes on to the retina at *f;* likewise the ray of light from *c* strikes the cornea at *g* in such relation to the corneal radius at that point as to make a change of its course necessary, and then it proceeds to the retina at *h*. If the axial-ray theory is true the line of direction would pass from *d* out through the nodal point, *n*, to *b*, whence came the ray *bd;* from *f* the line of direction would pass through the nodal point *n* to *e*, from which it would have to be prolonged to *j;* from *h* the line of direction would pass through the nodal point *n* to *g*, from which point it would have to be prolonged to *k*. The lines, *jb* and *kb*, show that the right angle *abc*, would appear to the eye as an acute angle, *jbk*, just as a photograph would represent the building. The eye does not see it that way, hence the axial-ray theory cannot be true.

Diagram 6 is an eye looking at the figure *abc*, intended to represent the corner of a house. The axial rays of light, *bd*, *aef*, and *cgh*, behave precisely as is shown in diagram five. According to the retinal-radius

theory the point *d* of the retina will project through the center of retinal curvature out to *b*, being everywhere coincident with the unbroken axial ray; the point *f* will project through the center of retinal curvature, *r* to *a*, the exact source of the ray *aef;* the retinal point, *h*, will project through the center of retinal curvature, *r*, out to *c*, the exact source of the axial

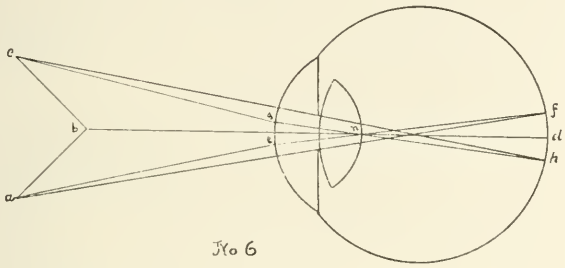


Fig 6

ray *cgh*. The eye sees the object as it is, hence the retinal-radius theory must be true.

These three facts unite in destroying the theory that "all lines of direction are axial rays prolonged, and that these lines all cross at the nodal point in the posterior part of the lens." This trinity of facts furnishes a firm foundation for that theory of projection which says: "All lines of direction are radii of retinal curvature prolonged."

ON SOME CHANGES IN VISUAL SENSATIONS AFTER CATARACT EXTRACTION AND ESPECIALLY BLUE-VISION (KYANOPSIA).

BY SWAN M. BURNETT, M. D., PH. D.

OF WASHINGTON, D. C.

When the perceptive elements of the organ of vision, which have been acted upon for months or years only by the light which has drifted through a semi-opaque lens and the tissues of the ocular walls, are suddenly exposed to the stimulus of ordinary white light, it is to be expected that some modification of visual sensation would be experienced. It is rather remarkable, therefore, that we find so scant mention of any such phenomena in our text-books and treatises. With the exception of some cases of red-vision (erythropsia) the matter seems to have been passed over in almost total silence. In twenty-two text-books in English, French and German at my command I find a reference to these manifestations, other

than erythropsia, in only two, and those phenomena mentioned are not of the same kind. One reason, no doubt, why the matter has received no closer attention is that the surgeon is so engrossed, at the time, with the one idea of a successful outcome for his operation as to useful vision, that other less significant and important questions are not considered or deemed worthy of record. On the other hand, the patient, thinking that some changes in customary visual sensations are to be expected as a matter of course, is also not likely to mention any such modifications unless they are very pronounced or long continued.

For a number of years I have, from time to time, observed cases where the phenomena to be hereafter described have been of sufficient intensity to cause the patient to bring them to my notice and many others in which my own questioning has established their existence. I am induced to direct the attention of the profession to them now in the hope that other observers may be induced to record occurrences in the same line, for I am sure my experience has not been exceptional and that every operator of any considerable experience must have met with similar cases.

A very common complaint of patients from whom a cataract of some months standing has been removed, is of a glaring white haze over all objects. Colors are almost abolished or are seen only dimly, and not in their true values. Arlt is the only author I have found who mentions this. "On first going out, which is usually in the evening, the patient observes that all objects appear as if covered with snow." (*Krankheit. d. Auges.* Prag. 1851. p. 321.) In some cases this whitish look has persisted for a week, or even longer in two instances. To sensitive people it is very annoying, and is likely to make them apprehensive lest their vision should not return to its former normal condition. I presume the advocates of the Hering theory of vision would account for this on the supposition that the black-white element of the retina suddenly coming into activity, after having been dormant for so long, overpower the color elements and drown them with their increased vigor. It is hardly necessary, however, to accept a distinct set of organs for the perception of white (the black-white substance of Hering) in order to have this sensation of glare after a long seclusion of the retina from white light. The normal eye experiences the same kind of sensation, though in a less degree, when exposed suddenly to an intense flood of white light. We all know, from experience, that under a very strong illumination it takes time to work out the finer shades of color which are overcome by the totality of light sensation we call white. We should expect a great intensification of this in a retina excluded for many months or may be years, from the normal stimulus of all the light

waves constituting white. This is further aided, in the case of cataract extraction, by the existence usually of a large pupil, from mydriasis or from an artificial coloboma. Even in the most pronounced cases, however, this phenomenon subsides in the course of a few weeks, and the natural and customary value of colors and white light is restored.

Instances of *red-vision* (erythropsia) are much less common. Quite a number, however, have been observed in cataract cases, and besides it is a phenomenon which is met with in the normal eye under certain conditions of exposure to very intense light for a considerable time, as observed in those traveling through the Alps in winter, and in the arctic regions. This has enlisted the interest of several careful students, among the latest of whom are Fuchs (*Archiv. f. Oph. B. XLII. Ab. 4.*) and Snellen (*Archiv. f. Oph. B. XLIV. Ab. 1.*). Fuchs thinks the phenomenon of red-vision due to the action of the strong light on the visual purple, and its regeneration slowly under a less intense light. There are many arguments against this, the principal one being the absence of visual purple at the macula lutea. One suggestion of Snellen is important and has much significance in our attempts to explain the phenomenon, and that is the color of the light which passes through the lids and choroid and is diffused over the retina. This in a very strong light is reddish, on account of the vascularity of the tissues through which it has passed. One has only to look towards the sun with the lids closed in order to verify this. The whole field of illumination is then of a bright red hue which is sometimes very intense. Snellen's theory, as applied to cataract extraction cases, is that under exposure to a strong white light the lids are pinched close together, leaving only a small passage for the light through the center of the pupil. While, therefore, the light entering between the lids is white, that passing through the lids is red, and the periphery of the retina is flooded with this reddish light. During exposure to a strong light nothing special is noted, but when the eyes are brought into a light of medium or low intensity, as in an ordinary room, the red perception at the periphery gives place, under fatigue, to a sensation of green (the complementary color of red) while the impression at the center appears red by contrast. This is certainly very plausible and accounts for the phenomenon in a strictly scientific manner. As, however, the conditions surrounding cataract patients are always practically the same, and instances of erythropsia are uncommon, we must infer that the personal equation—probably in the form of an unusual impressionability—is an important factor in this, as in many other analogous phenomena of abnormal sensations.

Erythropsia is not, however, the only form of color vision which is

liable to affect patients from whom a cataract has been removed. I have quite frequently noted that such patients remark on the *blue* color which pertain to all illuminated objects; and since my attention has been more directly given to the subject, I find but few who, at least immediately after the extraction, do not notice this bluish tinge in a greater or less degree. A number of times I have had patients, as soon as the lens was delivered and the pupillary space cleansed, exclaim—"How blue everything looks." Occasionally this bluish tint remains for a considerable time, as in a case now under observation for extraction of the cataract in the other eye. The patient is a colored man who had well-matured rather brown cataracts in both eyes. Objects were "as blue as indigo" he said, when the eye was dressed for the first time. Even now, some three months after the extraction, the electric lights appear to that eye as deep blue bags. After the operation on the second eye, which he has just undergone, the blue tinge is much less intense than it was in the first eye, and does not bother him at all. In one other case, that of a white woman, there was a recurrence of the blue-vision three times during a convalescence of three weeks, each attack lasting an hour or so. The exact circumstance attending these recurrences I was not able to learn of.

My attention was first strongly attracted to this phenomenon of kyanopsia some years ago by a highly intelligent and cultivated woman whose cataracts had matured very slowly and were of a uniform, deep, rich amber tint, without any striæ. Even at the time of the operation she could see sufficiently well to get about alone in her own house, showing that a quite considerable amount of light found its way through the sclerosed lenses. There was a small coloboma as a result of prolapse of the iris. As soon as the eye was exposed to the light she complained very much of the blueness of all illuminated objects; and it was several weeks before there was a return to the normal color-values in that eye. Without doubt the contrast between the vision in the operated eye and the remaining vision in the other eye in which all objects partaking of the color of the brown lens were more or less yellow, was a most important factor in this case in bringing out strongly the blue color.

In but one text-book or treatise on diseases of the eye have I been able to find a reference to kyanopsia following cataract extraction. This is in Becker's article on the Lens, in the *Gräfe und Sämisch Hand-Buch.* B. V. On pages 465 and 466 he says "Immediately after the expulsion of the lens the patient frequently sees everything, as the fingers held before it, not in their natural colors, but blue. This has been attributed to the operation of contrast, since the color perception of such patients must

be affected by the intensely yellow color of the nucleus. If this were true the phenomenon should disappear a short time after the expulsion of the lens, and should not be present in the case of white cataracts which do not have a yellow nucleus. Neither is the case however, and it can be more readily explained by the corticalis and thin layer of blood remaining in the anterior chamber. The blue-vision vanishes as soon as the remains of the corticalis are removed."

It is difficult to reconcile this opinion of Becker with all the facts or with the physics involved. In none of my cases was there any blood in the anterior chamber, the extractions being done according to the simple method, and the phenomenon persisted sometimes long after all remaining corticalis had disappeared. He fails, furthermore to tell us how corticalis or blood could give us blue-vision either by directly transmitted light or by contrast. I have not observed kyanopsia except in cases where the lens was of a more or less amber color, and the blue appearance is easily accounted for by the fatigue of the retina from long continued exposure to the yellow light, giving blue as a residual sensation in white light. In some cases this fatigue is readily recovered from, while in others it persists for a longer period and may recur from time to time under the operation of a more intense light, or some temporary alteration in the perceptive apparatus.

Kyanopsia: (*Κυαγεος*—blue, *οφις*—vision) is not a very common phenomenon under any circumstances, but it is of sufficiently frequent occurrence both in practice and in our literature to warrant, one would think, a place for it in the medical dictionaries, and yet a search through the most important dictionaries in English, French, and Italian has failed to discover the word in its proper form in any of them. In only two, both American, did I find any reference to blue-vision and this was under the erroneous spelling of *cyanopia*.

AN IMPROVED FORM OF STEREOSCOPE.

BY CHARLES A. OLIVER, A. M., M. D.

One of the Attending Surgeons to Wills' Eye Hospital; One of the Ophthalmic Surgeons to the Philadelphia Hospital; Member of the American and the French Ophthalmological Societies.

Illustrated.

Several years ago, whilst almost daily realizing the growing importance and at times absolute necessity of possessing some form of stereoscopic mechanism by which I could obtain adequate data both as to diagnosis and therapy in the various forms of extra-ocular muscle disturbance, and simulated blindness, I determined after the employment of the several instruments then at hand (the best of which was Javal's) to construct one which, whilst simple and uncomplicated, would fulfill all of the conditions that might be necessary to determine in any given case.

In December, 1894, after many trials and as the result of several modifications, the form of instrumentation shown in the accompanying cut was obtained and exhibited before the Section on Ophthalmology of the College of Physicians of Philadelphia.

In addition to the main features of the ordinary instruments, this contrivance possesses the following advantages:

I. A heavily weighted base, thus insuring stability.

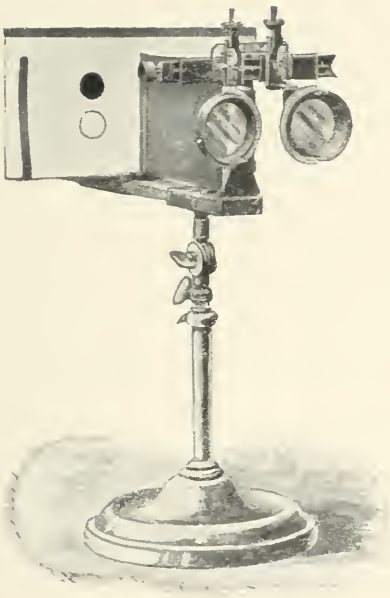
II. Three sliding vertical tubes each containing a set screw, by which any desired adjustment for height, rotation, and inclination can be obtained.

III. Sphero-prismatic eye-pieces held in separated cells, each of which is graduated in the same manner as trial frames, and having extra semi-circular grooves for carrying additional lenses and prisms.

IV. Each eye-piece so swung into a groove as to permit independent circular rotation in any meridian desired.

V. An inter-pupillary mechanism by which an exact measure and an absolutely correct position between the optical centers of the two eye-pieces or any combination of eye-pieces and the pupillary centers can be obtained for any desired point of monocular or binocular fixation.

VI. An adjusting arrangement by which any degree of vertical difference between the pupillary centers of the two eyes can be gotten, registered and made to coincide with the optical centers of the eye-piece combinations.



Dr. C. A. Oliver's Stereoscope.

VII. A sliding and self-regulating upright divisional wall between the two planes of vision, thus separating the two fields of vision except for any desired position, and thus avoiding any uncertainty as to result.

VIII. Focussing-rod marked in both fractional differences of inches and in millimeters; by which the exact position of the test objects can be registered.

IX. Test-holder adjustable to any point that the lenticulo-prismatic combination used may indicate for the test objects.

X. Test-holder, either removable from fields of vision or so regulated in inclination as to hold the test objects at any desired angle down and out from the vertical to the horizontal position.

XI. An improved series of well-executed and carefully adapted cards (including sliding plates, as in Perlia's series of Kroll's plates for orthoptic exercise,) accompanying each instrument.

Unless specially ordered for other working points, the form of instrumentation made and sent by the makers will be one adapted to ordinary office exercise, etc. This makes use of a pair of five degree prisms combined with a pair of four diopter convex spherical lenses; a pair of openings in the test-holder or a contrivance for the dropping of the test-holder out of position, thus permitting the use of the instrument when studies at greater distances out to infinity are desired to be made.

Messrs. Wall and Ochs, of 1702 Chestnut St., Philadelphia, Pa., U. S. A., have kindly undertaken the manufacture of the instrument. From them either the ordinary standard form of the instrument or any special modification can be obtained.

Erratum:—In Dr. Gifford's article on Epithelial Lip-Flaps, etc., in the December issue, the references to "Van Milligan" should have been to Van Millingen.

WOLFF'S OPERATIONS FOR CONGENITAL PTOSIS—A REPORT.

BY F. C. HOTZ, M. D.,

OF CHICAGO.

Illustrated.

The most noteworthy contribution to the surgery of the eyelids during the past year is undoubtedly Dr. Hugo Wolff's (Berlin) paper* on two new operations for congenital ptosis, in which the principle of advancement by tendon resection is successfully applied to the levator muscle. Attempts at advancing this muscle have been made by Von Graefe and Bowman, but with so little success that they abandoned the operation.

Eversbusch took the matter up again, and introduced the advancement by folding the tendon upon itself on the plan of de Wecker's advancement of Tenon's capsule, and in 1883 Snellen published his operation consisting in excising a portion of the tendon above the upper tarsal border, and re-attaching the tendon to this border. This operation, as Snellen remarked in his report, is "greatly embarrassed by the protrusion of the orbital tissue."

Dr. Wolff now shows us a far better and more effectual way of advancing the levator muscle. His operations appear very rational, and are the results of a careful study of the anatomy of the levator tendon.† If after removing the roof of the orbit we lay bare the levator muscle and follow its course to the eyelid we find its sheath firmly united with the tarso-orbital fascia about 8 m.m. above the upper border of the tarsus. This union of the fascia and muscle serves a physiological purpose; the fascia acts as a check ligament, for when the contracting levator draws the lid back, the fascia is also drawn back, but soon becomes stretched and opposes the further backward movement, thus keeping the retraction of the eyelid within certain limits.

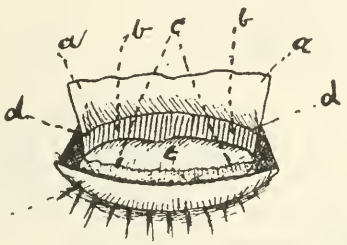
After this line of union (dd. Fig. 1) fascia and muscle sheath are intimately blended, forming a firm aponeurosis, which, passing over the upper border of the tarsus is attached to its anterior surface in a line (c) about 5 m.m. above the lid margin. This aponeurosis can easily be

* Published in the German edition of the *Archives of Ophthalmology*.

† During the past two years the writer occupied himself with the same question, and his experiments on the cadaver had led him to the same conclusions as Dr. Wolff.

separated from the tarsus with which it is connected by loose cellular tissue. When this aponeurosis is cut off at the line of insertion and reflected upwards the real tendon (bb) of the levator is exposed, which is inserted along the upper tarsal border. Directly under the tendon is the retro-tarsal conjunctiva, both being connected by a layer of cellular tissue.

Upon these anatomic relations of the levator muscle to the lid, Dr. Wolff has built his two operations for the relief of ptosis, and in several cases has had excellent results from both.

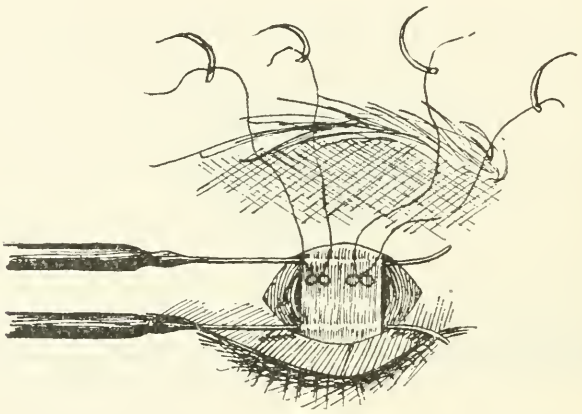


(Figure 1).

The aponeurosis, aa., cut off from its insertion, c, on the anterior surface of the tarsus, t, and reflected upwards to show the underlying tendon, bb, of the levator and the line of union, dd, between fascia and muscle sheath.

1. Resection of the levator aponeurosis through a cutaneous incision.—A transverse incision is made through the lidskin along the upper tarsal border, and the skin is dissected upwards and downwards from the orbicularis muscle. Near the center of the upper border of the tarsus a portion of the orbicularis, about 1 cm. wide, together with the underlying aponeurosis is seized with forceps and lifted into a vertical fold. At either side of this fold a small vertical incision is made, through which two strabismus hooks are passed under the tendon. One of these hooks is placed near the line of insertion, while the other hook is pushed upwards to or even beyond the tarsal border, according to the length of the piece to be resected. This piece is measured off in millimeters, and two catgut sutures being put in at the requisite distance from the line of insertion, the tendon is cut off in front of the sutures. The two ends of each suture are then passed down behind the tendon stump and brought out through the line of insertion; they are tied and cut off short, and the skin wound is closed over them by four silk sutures which may be removed after five days.

2. Resection of the levator tendon through a conjunctival incision.—The upper lid being everted its upper border is seized with forceps and turned up. In this position the lid is held by a lid-clamp and a transverse incision is made through the retro-tarsal conjunctiva to expose the levator muscle. The middle portion of this muscle is then taken up by forceps, and a strabismus hook put under it near the tarsal border, while a second hook is put under it at the distance where the tendon is to be divided. At that place then two catgut sutures are put into the tendon, and after the latter is divided in front of them, both



(Figure 11.)

ends of each suture are passed through the tendon stump at the upper tarsal border, tied and cut short. The conjunctival wound may be closed by a suture, though it is not absolutely necessary.

The first five days after these operations both eyes are kept closed by a bandage, which is to be changed twice every day. After the fifth day the bandage is left off, and if the lid of the operated eye is still swollen, cooling applications should be applied.

The success of these operations depends—as Dr. Wolff emphasizes—upon the accuracy of the resection; the resected piece of the tendon should measure exactly as many millimeters, as the vertical diameter of the palpebral aperture of the affected eye is smaller than that of the other eye.

SPONTANEOUS HEMORRHAGE INTO THE ORBIT

BY ARTHUR J. SHAW, M. D.,

OF BOSTON.

The patient, Mrs. B., I saw in consultation with Dr. A. D. Whitmore. The trouble started the last of February, 1897, ten days before I saw her. She was suddenly seized with severe pain about and in the orbit, the swelling came on rapidly, and caused much exophthalmus, and was soon accompanied by extensive extravasation of blood in the tissues of the lid and orbit.

Previous history—negative: Forty-seven years old—climateric one year ago. No abnormal condition was found by Dr. Whitmore. An examination made March 9—the first time I saw her—showed the left eye protruding one-half inch beyond the right, with a downward cast; cornea and conjunctiva were clear, with no inflammatory signs. The fundus showed a slight swelling of the disk, but there were no other changes, no stasis of the blood, etc. The pupil was dilated with atropin when I saw her. The treatment varied with the stage, and comprised: cold compresses, atropin, four per cent boracic acid solution, phenacetin, antipyrin, and later potassium iodide. March 13, the protrusion of the globe was slightly less, and motion of the globe was returning. May 3, I saw the patient at my office. Fundus was perfectly clear, and the protrusion of the eye was the same as on March 13, and the patient had single vision on looking directly ahead, and double vision looking in other directions.

V. O. D. $\frac{17}{20}$—1 sph. v=$\frac{17}{15}$

V. O. S. $\frac{17}{20}$—1 sph. v=$\frac{17}{15}$ + 1 sph. for near.

For treatment I ordered the above correction with a ground glass before the left eye.

To sum up, we have here a spontaneous hemorrhage into the orbit in a woman forty-seven years old, one year after the climateric. This is an extremely rare condition. Hemorrhages due to injury are, of course, very common, but the only like case I find reported, is one by Fiedenwald and Crawford, of Baltimore. Their case was that of a negro, in whom the condition appeared suddenly with greatly diminished vision; there was very little pain, and the absence of any inflammatory signs or bruit. Noyes in his text-book mentions this class of cases, saying they are very few, and the etiology so manifest, viz: Scorbutus, violent coughing, etc. This form of hemorrhage may, like that commonly due to injury, press upon the globe and nerve, and produce serious lesions, viz., optic atrophy, muscular paralysis, and other lesions may occur.

A NYSTAGMIC FAMILY.

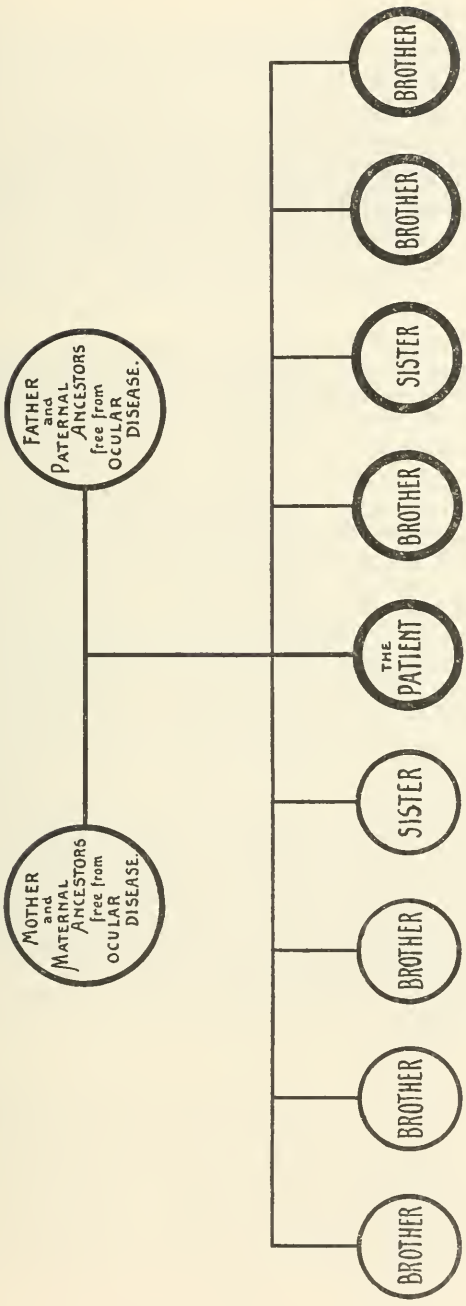
BY H. McI. MORTON, M. S., M. D.

MINNEAPOLIS, MINN.

Illustrated.

My excuse for exhuming the bones of a once much discussed, and yet undecided question—the cause of nystagmus—must be that the history of this family, which it is my pleasure to present, affords (together with cases reported by Casey Wood, Gould and others), interesting material for the study of the origin of this, as yet, obscure disease. From Wood's cases he infers the influence of the element of heredity, an inference not warranted from the cases presented by Gould or by my own. The abrupt change in the progeny (as is shown by the diagram) from a state of normal to one of abnormal ocular balance and its continuance, would lead one to suspect some embryonic changes, at that time, which influenced the embryo in a manner less subtle than we could properly designate as hereditary.

In all of the children the disease was congenital. In my judgment, those defects of the fundus, or of the focus, commonly assigned as *the causes* of nystagmus are not such, accurately speaking, but rather conditions, or predisposing causes, which influence the manifestation of the real cause, which may be, a malformation about, or improper correlation of, the oculo-motor centres occurring in the embryo. The embryonal defects may be so marked in many cases that the nystagmus manifests itself without the presence of trouble in either the refraction or fundus of the eyes. In this manner we could explain those cases of nystagmus in which we have little or no focal defect, and no lesions of the eye ground. Again, should the embryonal defect be slight and a tendency to nystagmus be present, but not in itself strong enough to give rise to it, those diseases of the fundus or anomalies acquired later in life, may act as predisposing causes to make manifest the central defect. The fact that in Albinos we have very commonly to deal with nystagmus is, it seems to me, consistent with this line of thought, since the irritation resulting from transcleral illumination, and the passage of light through the irides as well (due to insufficient pigment deposit), may not alone make manifest the nystagmus, but may point to some relationship between the


Father and Paternal Ancestors free from Ocular Disease.
Mother and Maternal Ancestors free from Ocular Disease.
Brother
Brother
Brother
Sister
Brother
The Patient
Sister
Brother
Brother
Brother

failure of the epiblast to deposit pigment, and the embryonal defect. Inasmuch as we frequently have nystagmus in otherwise healthy eyes, and have, also, very frequently, eyes with serious intra-ocular disease and focal defects without the disease, it would hardly seem a warranted conclusion to assign affections of the bulb as a common, or a real cause of nystagmus. If it be true that abnormalities of the peripheral portion of the visual apparatus are, as some writers contend, such potent factors in the causation of nystagmus, in view of the great number of cases affected, should we not find more cases of nystagmus? I present the following history:

Mrs. J. J., aet. 43, white, consulted me April 4, 1895, relative to a rapid and continuous movement of the eyes. The only inconvenience suffered was poor vision, which had always been impaired, and without change. The irides are brown. There is no opacity of the media or disease of the lids or conjunctiva. The ophthalmometer indicates, in the right eye 1.00 D., axis 90°-180°, and left eye 1.25, axis 75°-165°. The ophthalmoscope shows 5.00 D. of myopia in each eye. Disks are both vertical ovals. Choroidal vessels are visible, and exudative choroiditis is present. No old cicatrix or pigmentation is present. She informs me that she is the fifth child in a family of nine children. *Of this family of nine children, the five youngest are afflicted with nystagmus in a marked degree.* The others have no ocular disease. Her parents are strong, robust, and free from ocular disease. They have traced back their ancestry on both sides of her family, and feel certain that no member had nystagmus or any serious eye disease. None of her brothers or sisters has ever worn glasses. In the four cases affected like herself, she informs me that none have opacities upon the eyes, and they all see better than she does, her vision being $\frac{6}{9}$, not improved by the correction of her myopia and astigmatism.

The most careful inquiry indicates the absence of syphilitic disease. Three uncles died of phthisis. Inspection of the case revealed that with the eyes to the extreme left, there is less movement than in the excursion to the extreme right, when the movements are exceedingly rapid and the excursions measuring about 3 mm. With the visual axes directed upward, slight movement is noticeable; when directed downward, *all* motion ceases. When looking ahead, the excursions measure about one mm., are rapid and from side to side only. There is no rotary motion. She has worn glasses for three years.

504 Dayton Building.

A CASE OF TRANSIENT PULSE OF THE RETINAL ARTERY INDUCED BY THE APPLICATION OF HOMATROPIN.*

BY GEO. C. HARLAN, M.D.,

OF PHILADELPHIA.

The following case seems to have some interest as illustrating in a very direct manner the effect of mydriatics in increasing intra-ocular tension and the danger of using them indiscriminately in patients of advanced age:

A negro man seventy-two years of age, well preserved and previously in excellent health, with the exception of occasional attacks of subacute articular rheumatism, had recently been under treatment in the Pennsylvania hospital for a severe attack of kerato-iritis, which seemed likely to destroy the left eye, but had finally yielded to treatment. There was an extensive corneal opacity and a posterior synechia at the lower margin of the pupi and vision was reduced to $\frac{1^6}{cc}$, but the eye was painless and free from inflammation. The fundus could not be seen. As there was only $\frac{1^5}{c}$ V. in the right eye and lenses failed to bring much improvement, homatropin instead of cocain, which would have been more prudent, was instilled for ophthalmoscopic examination and retinoscopy. The media were not quite clear, but a fair view of the fundus showed a decidedly pale disc but no cupping, a slight choroidal disturbance at the outer margin, some narrowing of retinal arteries, and a sound macula, a picture of partial atrophy. There was a very distinct pulsation of the lower temporal artery. The tension was recorded as doubtful +, but there was only a moderate peripheral contraction of the field. The anterior chamber was normal and the cornea was sensitive. Having seen arterial pulsation follow the use of homatropin in another case it occurred to me that this might be the cause and I dismissed the patient without treatment. At the next visit the pulse had entirely disappeared. Two weeks later, the vision had slightly improved, under strychnia. The pupil was responsive and of medium size, the external appearances were normal and there was no retinal pulse.

The other case referred to was reported in the *Transactions of the American Ophthalmological Society* in 1890.

The patient was sixty-six years of age. An energetic pulse of all the arteries on the disc was several times produced by homatropin and stopped by eserin. There was only a very shallow cup and no bending of the vessels at the margin.

*Read before the Ophthalmological section of the College of Physicians, Philadelphia, November 16, 1897.

The field was normal. Tension + and there was no other indication of glaucoma but a slight congestion of the anterior ciliary veins. This patient, some months after the report of his case, had a well marked attack of glaucoma, of which the transient pulse may be considered the first decided symptom.

As the effects of homatropin are easily neutralized by eserin, might not its application be a permissible means of diagnosis in some doubtful cases? As my present patient is an employee of the hospital, we hope to have the opportunity of keeping him under observation and determining whether or not this transient pulse is, in his case, a symptom of impending glaucoma. He will be closely watched, and if any confirming symptoms arise an iridectomy will be advised.

According to most authors spontaneous arterial pulse scarcely ever occurs in the prodromal stages of glaucoma, and some consider it rare even in recent cases. de Wecker says that it is generally met with only when the attack occurs rather suddenly, and reaches a certain degree of intensity. I have, however, occasionally observed it in otherwise almost doubtful cases of chronic glaucoma. According to Schmidt-Rimpler the diagnosis of glaucoma may usually be made positively when arterial pulsation is found, and Berry thinks it is almost certain proof. I am accustomed to consider it in this light. Though it has been said to occur in other conditions, such as profound anemia and goitre, I have never met with it in a healthy eye except in cases of aortic insufficiency.

Whether we can exclude glaucoma when a pulse is not produced by the use of homatropin is another question.

To those ophthalmologists who keep a separate case book for registering the refraction and muscular condition of patients we would recommend the "Keystone Optometric Record." This is a neatly gotten up volume provided with blank spaces for recording all the necessary details connected with the prescribing of lenses. It is furnished with an index and ought to be of considerable value to refractionists.

Reproduction of a piece of wood, actual size, retained under the upper lid in the retro-tarsal fold for a period of eight months.

FOREIGN BODY OF UNUSUAL SIZE RETAINED UNDER THE RETROTARSAL FOLD OF THE UPPER LID FOR A PERIOD OF EIGHT MONTHS.*

BY JNO. W. CROSKEY, M.D.
Attending Surgeon Wills' Eye Hospital, Philadelphia, Pa.

Illustrated.

H. J. presented himself at the clinic October 12, 1897, simply complaining of a "sore eye," and the following history was elicited:

While chopping wood eight months ago in Russia, a fragment of the wood flew off, striking him in the eye. As the eye caused him very little trouble no special attention was given it. Last March he left Russia to come to America, and as he crossed to Germany he was subjected to a physical examination; his vision was tried, and as this was good he was permitted to pass. He arrived in this country April 14th. The eye was still giving him a little trouble, bu as it occasioned him no special inconvenience, medical aid was not sought. When he presented himself at the clinic the appearance of the eye indicated a purulent ophthalmia. Upon everting the upper lid there was found, resting securely in the retrotarsal fold, a piece of wood, as shown in the illustration, 18 mm. long, 6 mm. wide and 3 mm. thick, weighing, when the moisture had evaporated, one and a half grains. The upper lid was covered with a thick, tenacious membrane and at the inner angle was a mass of granular tissue 8 mm. in length, 7 mm. in width and 2 mm. in thickness. The entire upper lid was somewhat granular in appearance; the upper and inner quadrant of the cornea was slightly hazy, but the bulbar conjunctiva was free from any hyperemia. The piece of wood was removed, the granular tissue was excised and an astringent wash was given, which soon relieved the traumatic conjunctivitis.

The case is cited as one of particular interest; first, on account of the size of the foreign body; second, that it was allowed to remain under the lid for so long a time; and, third, the little damage to the cornea and adjacent tissues by its presence, a possible explanation of which lies in the fact that the piece of wood was macerated and softened by the lachrymal secretions.

*Read before the Philadelphia County Medical Society, October 27, 1897.

THE

OPHTHALMIC RECORD.

A MONTHLY REVIEW OF THE PROGRESS OPHTHALMOLOGY.

VOLUME VII. CHICAGO, JANUARY, 1898. NO. 1. NEW SERIES

EDITORIALS.

REFRACTION WORK AS DONE IN HOSPITALS AND DISPENSARIES.

Patients come to us occasionally with the complaint that their glasses, prescribed at some hospital or dispensary, do not give the relief desired, and upon investigation we frequently find they are wearing spherical lenses when they really require cylinders or sphero-cylinders. These glasses have evidently been prescribed with very little care, and without the use of the cycloplegic — or with the idea that the patient is unable to pay for a cylindrical or compound lens, and that the less expensive spherical lens will give some relief by relaxing the accommodation. For the former there is no excuse, and the latter is mistaken kindness. If there is astigmatism the relief given by a spherical lens is doubtful, and if there is compound astigmatism, the cylindrical lens should be preferred to the spherical as the astigmatism is the more painful element. Both defects should, however, be corrected, for most opticians will sell glasses at half price, or less, to dispensary patients.

Indigent patients are especially dependent upon their eye-sight, and should receive the most careful attention. At some dispensaries, when a patient has better vision than $\frac{20}{30}$ no attention is paid to the refraction, and yet we know that many cases of very annoying astigmatism, or decided hypermetropia, have apparently normal vision. Such a patient may reject a +0.5D. lens, and under a cycloplegic, accept one twice as strong. Only the fact of frequent neglect of these matters induces me to insist upon it that when patients, especially sewing girls or school children, apply for treatment at a dispensary, with a history of headaches, painful eyes, or crusty lids, a most careful examination should be made

under a cycloplegic, for errors of refraction; the proper lenses should be prescribed, and the patient sent to an optician who is as willing to do something for charity — just as the physician has done who made the examination. In regard to the kind of cycloplegic used, atropin is occasionally required for therapeutic reasons instead of homatropin, but in some dispensaries it is prescribed from motives of economy. Cannot these institutions better afford to use a few cents worth of homatropin than the average patient can afford to lose a week or more from work.

E. O. B.

THE OCULIST AS A WITNESS IN COURT.

The disagreeable and often thankless duty of testifying in court falls not infrequently to the lot of the ophthalmologist—and it is not always a happy one. The conditions taken into legal consideration are necessarily very varied, involving the morbid states of an organ said to be subject to more diseases than any other of the body, and moreover, the eye is so intimately connected with the nervous system, and so prone to disease from morbid conditions of the blood, that skilled and intelligent testimony upon these points goes far toward furthering the cause of justice in many cases of disease and injury.

As an instance, we may consider the actions sometimes brought by women for injuries which are alleged to have caused paralysis, etc. Such cases may present many conflicting features and puzzle the medical examiners to discriminate between hysteria or malingering on the one hand, and organic disease on the other. The condition and reaction of the pupils; the ocular reflexes; the condition of the eye-ground and of the vision, are here of importance. The instillation of a weak solution of homatropin in one eye by a litigious woman who feigned hemiplegia from a slight injury to the head, introduced an element of seeming probability, which was only excluded by a re-examination made unexpectedly, the pupil then responding to light and the fraud being exposed.

As in all cases of injury to any portion of the body, the examination of those of the eye must be minute, methodical, and exact. This is self-evident. Nevertheless, when on the stand, the oculist has too often to regret that his notes are so superficial and inexact as not to bear the test of a cross examination, and that he has not by a study of the facts, formed an adequate or consistent conclusion, opinion, or theory of the case. The cultivation of the habit of close and accurate observation, of record-

ing the ocular conditions and the constitutional states producing or modifying them, is the best safeguard.

Among the works which serve as guides and for reference in connection with court testimony, may be mentioned Turnbull's translation of von Arlt's "Injuries to the Eye," Gowers' "Medical Ophthalmoscopy," and Knies' "The Eye in General Diseases." But most valuable of all is a thorough knowledge of the physiology and physiological relations of the eye, especially as regards the nervous system. F. B. E.

COMMON SENSE VS. MUSCLE-CLIPPING.

Judging from a paper which has recently been presented to a medical society on this side of the Atlantic, the muscle tenotomy fad is about to "break out in a new spot," for the paper advances the theory that trachoma may be produced by an anomalous position of the horizontal plane of the eyes caused by a malformation of the skull.

The author thought that under these circumstances, the eyes being elevated and the nervous force of the eyelids and eye muscles pressing the eyes downward so as to see well below the horizontal plane, trachoma might be produced by lid pressure. *Of course*, according to the author, a well-assorted series of tenotomies and properly adjusted lenses will cure these cases. It is gratifying to note, however, that the tenotomy cure for trachoma receives but little, if any, encouragement, but it is to be feared that in this day of dramatic therapeusis, this theory, emanating from a high source, may find its disciples and that before long the journals will be full of minutely recited and accurately proven cases, showing beyond a peradventure that the old, threadbare tenotomy remedy is still accepted as a panacea, and is again equal to the emergency, and, that the scientist with his test tube and microscope, had better fold up his tents and like the ancient Arabians quietly vacate the premises.

Most progressive ophthalmologists, while regarding somewhat dubiously *graduated* tenotomy as an effective remedial agent, especially when it has to be performed on one person some ten or fifteen times, with the results still in doubt, are yet believers in a rational "tenotomology." But when the valiant knights, who wear this theory upon their breast-plates, wave aloft their bloody tenotomy scissors, and pathetically beg for more diseases to be produced that they may cure them, we feel that things have gone quite far enough, and that a vigorous protest should be entered against this form of professional hallucination. It may be news to the

advocates of this theory to learn that the entire system of therapeusis is not embraced in this procedure, and that many ailments can be successfully treated from other standpoints! It may surprise them to learn that many eye diseases are frequently produced or aggravated by general disorders such as alimentary, hepatic uterine, spinal, and nervous diseases. It may be beyond their comprehension that eye and other diseases frequently recover *incidentally* during the course of treatment, without reflecting any real credit upon the medical attendant; in short, that diseases sometimes disappear *in spite of treatment.* And yet we venture to affirm these truths, with the unwavering belief that no rational criticisms will be made of them. If such assertions pass unchallenged, then the position of the constant muscle-clipper must be scientifically untenable, and he should endeavor to expand his mental field of vision, until he is capable of bringing pathological breadths within his cerebral scope. F. A.

The Public Library of Cincinnati will hereafter refuse to issue books to persons living in houses where contagious diseases exist, and books being returned from such houses are to be disinfected and fumigated before being returned to the shelves of the library.—*Journal of the American Medical Association.*

From the *Philadelphia Medical Journal,* we learn that in the Vatican Library in Rome, there have been found, by Dr. J. M. Berger, a collection of ophthalmic prescriptions and directions for treating various diseases of the eyes, in the handwriting of Michael Angelo. As it is well known, that the sculptor and artist, was almost blind at the time of his death, they are not improbably intended for himself, and may possibly have been obtained from medical friends of his, or others whom he consulted, and then transcribed.

REPORTS OF SOCIETIES.

SECTION ON OPHTHALMOLOGY.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Meeting of the Ophthalmic Section of the College of Physicians, November 16, 1897. The Chairman, Dr. W. F. Norris, in the chair.

Dr. W. C. Posey presented a *Case of Metastatic Uveitis in Both Eyes Causing Blindness, Resulting from an Intense Inflammation of the Nose and its Accessory Sinuses.* A woman, aged 27, had been for several years subjected to the fumes of sulphuric acid, oxalic acid, and chlorin gas while working in a steam laundry. A few months after engaging in this occupation she had a sense of irritation in the nose and tingling in both hands. The nasal inflammation became worse until there was a profuse discharge from the nares and soreness of the mouth and nose. After some months the nasal symptoms subsided, but her eyes became inflamed, and vision, which had commenced to fail, was entirely lost in two years. The conjunctivæ were healthy, the corneæ clear, save for a small nebula near the limbus of the right; the globes were shrunken, quadrate, and soft; the anterior chamber was filled by the thickened, discolored and vascular iris; the pupillary margin indrawn and the pupil filled with organized lymph. This condition, Dr. Posey believes, was the result of emboli consequent upon the intense chronic hypertrophic rhinitis which had induced uveitis and atrophy of both globes.

Discussion.—Dr. B. A. Randall had studied several cases of blindness from optic neuritis caused by nasal disease, but the form of metastatic blindness as exhibited by Dr Posey's patient, was rare. He had operated by iridectomy in a similar condition of absolute blindness, closure of the pupil, low tension, and nystagmus, and the patient had recovered vision in one eye sufficient to enable him to earn his living as a canvasser, an occupation that required extensive traveling. Therefore the prognosis is not altogether hopeless. In answer to a question of Dr. Norris as to the consistence of the iris, Dr. Randall replied that while it was friable, it was sufficiently dense and tough to permit of a clear coloboma and detachment of the excluded pupil.

Dr. Howard F. Hansell exhibited a *Case of Traumatic 3d Nerve Paralysis.* Eight days before, the patient, while gunning, was hit by three No. 4 shot by a companion at the distance of 80 yards, one penetrating the chin, another the soft tissues of the nose, and the third the inner angle of the commissure of the left eye. The lids and conjunctiva were ecchymotic, the ball uninjured but widely divergent and slightly exophthalmic, the pupil dilated and unresponsive, the accommodation paralyzed, and the media and fundus were entirely normal. X-ray photographs, taken by Dr. W. M. Sweet, showed clearly one shot in the nose and another in the apex of the left orbit. The man could rotate the eye only outward, all other motions being completely abolished. At the expiration of eight days the power of the levator and that of the superior rectus had partly returned, otherwise the conditions were unchanged. From the paralysis of all the muscles governed by the 3d nerve it would seem as though the trunk of the nerve had been severed, yet it is hardly conceivable that such a severe injury could have occurred without involvement of adjacent tissues.

Discussion.—Dr. Sweet, by invitation, described the method and the instrument adopted for localizing the shot in the orbit and exhibited several skiagraphs.

Dr. G. C. Harlan reported a *Case of Transient Retinal Arterial Pulse Induced by the Application of Homatropin* in a negro man, 72 years of age, whose general health had been unusually good, with the exception of an occasional attack of subacute articular rheumatism. The left eye was disabled by the results of an attack of kerato-iritis. In the right eye V. $=\frac{15}{c}$. There was no decided increase of tension, the pupil was responsive, the anterior chamber normal, the cornea sensitive, and only moderate peripheral contraction of the field. Homatropin was applied for ophthalmoscopic examination and retinoscopy. The disk was decidedly pale but without excavation, the vessels were slightly narrowed, and there was a very distinct pulsation of the lower branch of the retinal artery. At the next visit, and in a subsequent examination several weeks later, the pulse had disappeared and there had been some improvement of vision under the use of strychnia.

Dr. Harlan referred to a case that he had reported to the American Ophthalmological Society in 1890. The patient was 66 years of age. An energetic pulse of all the larger arteries on the disk was several times produced by homatropin and stopped by eserin. There was only a very shallow cup and no bending of the vessels at its margin. Tension was doubtful and the field and anterior chamber were normal. This patient,

some months after the report of his case, had a well-marked attack of glaucoma of which the transient pulse may be considered the first decided symptom. He suggested that, as the effects of homatropin are easily neutralized by eserin, its application might be a permissible means of diagnosis in some doubtful cases. In a recent case of failing V. with decided cupping, but no other positive symptom of glaucoma, in which iridectomy of one eye had been worse than useless, the absence of a pulse after the use of homatropin had been considered a useful indication.

Discussion.—Dr. Edward Jackson thought the use of homatropin for the diagnosis of glaucoma sometimes justifiable, provided the patient assented and could be kept under observation. He had employed it for this purpose. He referred to a case where duboisin had been used as a mydriatic and had produced the retinal pulse. Iridectomy was done and the patient retained her vision for sixteen years. In the second eye eserin had been resorted to, and later, after glaucoma developed, medical and operative treatment were of no avail and vision was entirely lost.

Drs. C. H. Thomas called attention to the relation of the use of mydriatics in refraction work to possible subsequent blindness, as from optic atrophy, and the chance that the patient may suspect a causal relation and hold the physician responsible.

Dr. G. E. de Schweinitz described some *Cases of Central Amblyopia and their Significance*, dwelling particularly upon the early stages of the toxic variety of this affection, when the scotoma rapidly disappears under treatment and visual acuity is restored to the normal. He suggested, in accordance with recent observations, that the lesion at this stage of the disease is probably a vascular disturbance in the macular tract,—a lesion which antedates either inflammation or degeneration of the involved tissues. One case of unilateral central scotoma was presented in which no cause for the visual defect except the abuse of tobacco and alcohol could be found, but he agreed with Dr. Berry and others, that in spite of the absence of other etiological factors, these unilateral cases should be regarded as of doubtful toxic orgin. Unilateral scotomas as representatives of the stigmata of hysteria were also recorded, and the author was again in accord with Dr. Berry, that although this etiology had been suggested, they were often the forerunners of serious nervous disease. Finally, cases of scotoma occurring in the so-called "neglected eyes" were presented, one of which had vitiated the visual results of a perfect cataract extraction. Dr. de Schweinitz urged the importance of careful examination for scotomas in obscure cases of amblyopia, and described the methods which he had found efficacious for determining these defects in

the center of vision when the ordinary coarser methods of examination failed.

Discussion.—Dr. A. G. Thomson related a case of so-called "hysterical scotoma" in a young woman. For a space of ten degrees around the fixation point she was blind for form and color. In ten days this had entirely recovered, and a smaller but negative one appeared in the other eye which up to this time showed no abnormality.

Dr. Risley had recently seen a young woman who presented double optic neuritis with slight swelling, vision gradually sinking to $\frac{1}{10}$, with absolute macular scotoma and peripheral limitation of the field in each eye. No cause could be assigned, although constant hard study through an over-correcting myopic glass might have aggravated the trouble. Under increasing doses of potassium iodid and mercury the scotoma disappeared on one side, and is found only after careful searching on the other; the fields widened and vision was largely restored.

Dr. Harlan suggested that transient scotoma may be due to a slight degree of the same kind of vascular disturbance that, if pushed far enough, would lead to macular hemorrhage.

Dr. W. F. Norris presented a *Case of Tumor of the Orbit in a Child of 12 Years of Age.* A severe traumatism at two years of age caused palpebral ecchymosis. Soon after his parents noticed an unnatural projection of the eye. There is now a tumor, presenting two rounded prominences at the upper inner angle of the left orbit, over which the skin is movable and from which it can be raised in a fold. The eye is forced downward and outward, and its motions upward and inward are almost abolished, while in every other direction they are of considerable extent. Pressure on the eyeball does not force the eye backward into the orbit, nor cause any diminution in the size of the swelling, nor does it cause any dizziness, alteration in the movements of the eyes, difficulty of breathing, nor any other sign of cerebral disturbance. Pressure on the projecting part of the tumor, however, forces the eyeball still further downward and outward, while pressure on the eyeball renders the tumor more tense. There is no hard lump to be felt, no pulsation, and no bruit. The tumor is a fluctuating mass, which apparently extends backward along the roof and inner side of the orbit and which lies outside of the muscle-funnel. The vision in the right eye is $\frac{5}{5}$, in the left, $\frac{5}{7}$. The media are clear and the intra-ocular ends of the optic nerves healthy. The growth appears to be a cyst extending far back into the orbit, and the question arises what sort of a cyst it is. It is probably not an encephalocele, as it does not diminish and no cerebral symptoms are produced by pressure. Fis-

sures between the orbit and the cranial cavity often diminish or close during growth, and diagnosis is therefore difficult. Its consistence makes it probable that it is not a fibro-cystic tumor. The absence of neuralgic pain and its slow growth argues against its being an echinococcus. It seems to me more likely that it is a dermoid cyst, which was overlooked till the patient was two years old, and that the accidental injury which then occurred caused it to grow and to excite attention. I propose, therefore to remove the tumor, while endeavoring to preserve the eyeball.

Discussion.—Dr. de Schweinitz had removed a similar tumor, by dissection, from the upper and outer angle of the orbit. It was found microscopically to be a cystic angio-adenoma of the lachrymal gland. Drs. Risley and Randall alluded to cases that were distinctly dermoids, the latter being firmly attached to the orbit.

Dr. Edward Jackson read a paper on *The Technique of Needle Operations on the Lens and Capsule*, and called attention to certain points with reference to these operations. In some cases discission of the lens differed essentially from division of the capsule. To avoid the escape of lens matter into the anterior chamber, the opening in the capsule should be small, and to get such a small opening and yet freely divide the lens, it was necessary to bring the opening in the capsule close to the opening in the cornea, by letting the aqueous escape. But to divide a membrane after cataract extraction the longest possible sweep of the cutting edge was best, and this was obtained by entering the needle through the limbus. This point of entrance also reduced to a minimum the risk of infection, because the wound in vascular tissue closed promptly after the operation. In dividing a capsule it was often best to carry the incision through those portions to which posterior synechia were attached, thus freeing the iris from an irritating drag upon it. He also called attention to the difficulty of securing a crucial incision and the greater certainty of success in making a T-shaped incision, which would allow sufficient gaping to give the required clear pupil.

Howard F. Hansell,
Clerk of Section.

CHICAGO OPHTHALMOLOGICAL AND OTOLOGICAL SOCIETY.

A regular meeting was held December 14, 1897, with the president, Dr. Wm. T. Montgomery, in the chair.

Dr. Horace M. Starkey made some remarks on the *X-rays in Ophthalmology*, and reported two cases where the X-ray had been successfully employed in locating particles of steel in the eyeball.

The first case was that of a man aged thirty-one, sent by Dr. Larkin to Dr. Starkey's service at Mercy Hospital, June 29, 1897. The day before, while at his work as a machinist, a piece of metal, or scale, rather, had flown from his chisel and injured his left eye. When seen, the left eye and eyelids were red, conjunctiva quite ecchymotic, cornea had a ragged laceration extending across its upper part, about as long as an incision for cataract extraction, extending to the ciliary body at the outer side, and nearly to that body on the inner side. The iris was lacerated and incarcerated, the lens opaque, and the wound large and ragged. Nothing could be seen within the eye, and the case was treated in the usual manner. He stayed in the hospital two weeks, and left much improved, being seen once or twice afterward at intervals of a week. About a month from the time he first came into the hospital, the eye began to show a little softening, though it had cleared up sufficiently at the inner side to see the red reflex. It was evident that the eye was hopelessly damaged, and symptoms of sympathetic irritation appeared in the other eye. August 20th, a skiagraph was taken with a view of locating the foreign body, which showed, very definitely, that a large piece of metal was present in the eye. An attempt was made to extract the iron with a strong electro-magnet, and this, being unsuccessful, the eye was removed.

The second case, a machinist who had been working with a bit, thought his eye was injured by a piece of metal. An examination showed distinctly a perforation of the cornea about a third of the way from the center at the lower border, and a little punched out perforation of about the same size through the iris. The lens was opaque, so that the interior of the eye could not be seen. There was also hemorrhage. A foreign body was detected by the skiagraph. No pain was present until the following morning. The next day there were present hypopyon and evi-

dences of severe septic inflammation of the eye. An unsuccessful attempt was made to remove the steel with the magnet. The eye was then enucleated, and on section the piece of steel was found, surrounded by a clot of blood, at the back of the eye just below the optic nerve entrance.

The third case occurred two years ago, before there was any possibility of using the X-ray. It was a good case for the use of the electromagnet. The media were clear. Doctors Wilder, Mann and Hawley studied the case with Dr. Starkey for a number of days, and concluded that a piece of metal was present, swinging in the vitreous in the anterior part of the fundus. It was free from exudate, and presented a glistening appearance. On examining with the ophthalmoscope, a broad and narrow side alternately presented itself towards the examiner. On consulting another ophthalmologist he was told that the foreign body was merely a clot of blood which would become absorbed, and no attempt was made to remove it. Eventually the eye was lost, and sympathetic irritation began in the other eye. The eye was then removed, and the particle was found in the situation as seen with the ophthalmoscope.

Discussion.—Dr. C. D. Westcott asked Dr. Starkey if it is necessary to make long exposures in these cases, and if there is any danger attached to the application of the X-rays to the eye.

Dr. Casey A. Wood said he was among the first to interest himself in the use of the Roentgen ray and its application to the localization of foreign bodies within the eyeball and orbit. After some little experience with it he became so disgusted with the absence of results that he was indiscreet enough to say that he did not consider it of any value whatever. About that time Dr. Sweet and others in Philadelphia had been more successful, with improved apparatus, in localizing foreign bodies within the eye. His first experience has followed him, however, even to the present day. Two or three weeks ago a man appeared in his office with, presumably, a foreign body in his eye. The taking of a skiagraph was at once suggested, so that its position could be determined with a view to removal. It so happened that living in the patient's immediate neighborhood was a man who had the X-rays used upon his head some months ago, and was exposed to the rays, during the skiagraphy, from three-quarters of an hour to an hour and a half. As a result of this he had lost a portion of his scalp and most of the surrounding hair, following a local cellulitis. Dr. Wood's patient, accordingly, would not, despite his representations, allow the "infernal machine" to be turned on him. He was glad to say, however, that since then, as Dr. Starkey has so well shown this evening, with a very short exposure and by means of triangulation the early crude

instrument has been so much improved that this method of diagnosis is rendered effective, easy of application, and perfectly harmless.

Dr. Albert B. Hale had made several experiments with the X-ray and obtained similar results to those mentioned by Dr. Wood, when this matter was brought before the profession, but they were subsequently modified by the use of improved apparatus. An interesting discussion had taken place at the Philadelphia meeting of the American Medical Association on this subject. It was, however, maintained that good results could be obtained by triangulation methods. In only one case has Dr. Hale used the X-ray with considerable liberty. He made several exposures in all directions with varying strengths of the ray in approximated tubes, and did not get any cellulitis or loss of hair. The patient was a young woman, was willing to submit to the X-ray, and there was absolutely no trouble from it. He was unable to localize anything, and does not know whether failure in this case was due to the absence of a foreign body or to some error on part of the X-ray.

Dr. Horace M. Starkey said: The exposure is very short, never longer than eight minutes, and usually from two to four minutes. He does not think there is any danger of erythema, falling of the hair, or changing of the color of the hair, from four minutes exposure. In the skiagraph of the eyeball of one of the cases there was a ten minute exposure, because a low vacuum tube was used. The coats of the eye are relatively transparent to the X-rays, hence it required much longer time for the rays to cast a shadow.

Dr. Henry Gradle asked if any gentleman has had any personal experience with the large stationary magnet in either extracting iron chips from the eye, or in recognizing them, and is such a magnet to be had in the city. It is an expensive apparatus, and the occasions for its use in private practice are not very frequent.

Dr. Hale: The Western Electric Company will fix up a magnet any time for experimental work or other purposes. They will make a magnet of any required strength for the use of oculists.

Dr. K. K. Wheelock, of Fort Wayne, read a paper entitled *Tropho-Neurotic Keratitis* which will appear in full in the February RECORD.

Discussion—Dr. Wm. H. Wilder recalled several cases in his own experience that were extremely difficult to classify, and which possibly might be placed under the head of Tropho-Neurotic Keratitis. He had a case now, just recovering, which has been under treatment for fifteen weeks. It was one of those obstinate superficial ulcers of the cornea, beginning, as we sometimes see cases of herpetic keratitis, gradually spreading until it

involves the whole surface. Everything he could think of was tried, cauterization with nitrate of silver, carbolic acid, and galvano-cautery, and nothing seemed to give so much relief as the method recommended by Swanzy of applying absolute alcohol to the cornea. After such an application there would be much relief. This was repeated on three different occasions. Since the last application there has been no more trouble. Dr. Wilder does not know whether we can all agree with the author of the paper that these conditions are dependent upon some disturbance of the trophic nerves that exist in the Gasserian ganglion. Possibly all such cases are in a certain sense dependent upon some lesion of the trophic centers, because so often they are associated with some peculiar form of malnutrition. It is reasonable that we should classify them in the same group with those peculiar cases described by Haab and others, which come on after a febrile attack. The cause may be a malarial poisoning, in which cases the ulcer would assume a peculiar dendritic form, or there might be only a few isolated spots of infiltration in the cornea. At any rate all such cases seem to be allied to herpes in origin, and are often associated with herpetic efflorescenses on the margins of the lips and nose, such as may follow bronchitis, measles or any febrile disease. This is not herpes zoster, which is a much more serious affection, but is simple herpes or herpes febrilis.

One point of interest which Dr. Wheelock brings up is the absence of sensibility of the cornea. In these cases there is a diminution of sensation, a very important point, and one upon which not enough emphasis has been laid.

Dr. W. F. Coleman recalled two similar cases. One was a male, the other a female, both about twenty-five years of age. They at first eluded any diagnosis as to the cause of the disease. Both had ulcers of the cornea. One case passed through the hands of an excellent oculist, who relieved the patient and sent him home. In a few days he returned, and fell into Dr. Coleman's hands. After getting a detailed history of herpes zoster of the forehead and scalp in each of the cases, the patients were put on various remedies to relieve the intense pain, which was only temporarily eased by large doses of chloral, morphine, and quinine, but permanently relieved by sodium salicylate, the improvement being very marked and sudden. The further treatment consisted of electricity, which seemed to rapidly and permanently benefit the condition. Dr. Coleman wished particularly to mention the beneficial and rapid effect of the sodium salicylate.

Dr. C. P. Pinckard reported a case, now under treatment, which, while

not neuro-paralytic, perhaps, resembles such cases in some respects. Some four weeks ago he was called to see a lady, about seventy years old, who had an herpetic eruption on the outer part of the skin of the upper lid. There was marked edema of both lids and conjunctiva, accompanied by redness and considerable pain. Later there appeared herpes on the side of the nose and temple. The whole corneal surface became hazy, especially at the periphery. At the same time, the cornea became very anesthetic. There was, and is still, some circum-corneal injection, but it is not very great. There has been no pain, nor has a vesicle formed on the eye. It seemed to Dr. Pinckard that this condition is a true neuropathic keratitis; whether paralytic or not, it is hard to say. The herpetic spots on the face have healed, but no change has taken place in the cornea.

Dr. Henry Gradle had some hesitation in speaking at first, because he had no observations strictly analogous to those given by the speaker in his paper. But, as the discussion is wandering somewhat, it may not be amiss to refer to some of the topics. It seems to him the other speakers have not made the sharp distinction that there is really between ordinary herpes and herpes zoster. They are separate and distinct diseases. Dendritic keratitis, as mentioned by Dr. Wilder, can begin as corneal herpes. He had seen two cases this year where it began as distinct minute herpetic vesicles, subsequently developing into the dendritic form. We know how persistent this is. In these cases there is no diminution in sensibility.

He had seen two instances of corneal involvement in the course of herpes zoster. The cases had begun before he saw them. In neither case was the ulceration quite as important as the keratitis. There was a diffuse haze of the cornea.

In these cases of keratitis and corneal ulcer following herpes zoster of the forehead, there is a great deal of pain, in spite of diminution of sensibility, or even anesthesia to direct touch of the conjunctiva and cornea, but evidently the deeper tissues are not devoid of sensibility, because the pain is excruciating in this trouble. It is well known that some of the cases are followed by serious consequences. Some get iritis, others even panophthalmitis. One of his cases was followed by paralysis of one of the recti muscles.

The statement of Dr. Wheelock as regards the influence of the trophic nerves on the cornea is open to question. Physiologists hesitate at the present day decidedly before accepting trophic nerves as positively proven. It is true that by division of the trigeminus we can almost invariably produce corneal ulceration in animals, but at the same time,

mechanical means, such as sewing a shield of wire screen to the lids will prevent this ulceration. It is perhaps unsettled whether section of the nerve injures the cornea by dessication on account of the absence of reflex lid movements or by permitting injuries to occur without the notice of the animal, but the existence of true trophic nerves is as yet a hypothesis.

Dr. Wheelock cited the first case of herpes zoster ophthalmicus for the reason that through it his attention was first attracted to the recognition of corneal insensibility as a valuable factor in the diagnosis of a certain class of cases; and what he saw in that case led him to note these various points and the peculiar influence of faradization upon the insensible cornea. He has had, perhaps, half a dozen cases of tropho-neurotic keratitis. In searching the literature of this subject he had not found any clear, concise report of such cases. There had been a jumbled, imperfect, composite picture of several kinds of corneal affections brought together under the head of neuro-paralytic ulcer, but nothing distinctive; and he brought this report up for the purpose, if possible, of establishing a distinct classification for this class of corneal affections and putting them where they really belong, viz: as tropho-neurotic keratitis. Dr. Wheelock believes that he is perfectly correct in his observations. The weight of experimental physiological testimony is stronger in favor of special trophic fibres in the Gasserian ganglion than it is against the presence of such fibres.

Dr. F. C. Hotz opened the discussion on *Holocaïn*. At the October meeting he read a brief report of his observations with holocaïn. When the report was published Dr. Würdemann wrote that his experience had been in some respects different from his, and asked whether it would be agreeable to have this matter brought up for discussion at a subsequent meeting. At the October meeting Dr. Hotz stated that holocaïn was a very prompt, quick-acting anesthetic, but seemed not to penetrate deep enough to make it of value for more extensive and deeper operations especially those involving the opening of the eyeball. He gave a number of instances and compared the effects of holocaïn and cocain in the same patients. He has since used the remedy quite frequently and can say that his results have been about the same. For instance, he had occasion to use the electro-cautery on an episcleritic nodule; the cornea and conjunctiva were profoundly anesthetized at the end of a minute, another drop was instilled after the first application and two minutes later the cautery applied. The superficial anesthesia was complete, but the cautery caused the most violent pain. In tenotomies and advance-

ment similar results have been obtained as those reported at the previous meeting, so he still holds to the opinion that holocaïn is not as deeply acting as cocain.

Dr. H. V. Würdemann of Milwaukee followed; his paper *A Further Report on Holocaïn as a Local Anesthetic in Ophthalmic Work* appearing in in full on page 7.

Discussion—Dr. Bulson: How many double iridectomies did you do?

Dr. Würdemann: One. The patient was an old Irish woman, very nervous and ignorant, who said that she did not feel any pain. In this case a double iridectomy was made at one sitting, the first eye by himself and the second was operated on by his associate. In one eye the tension was great, so that the iris prolapsed at once. In this case one eye was completely blind from glaucoma, and also cataractous. The other eye was cataractous, but perception of light was fair. Two weeks ago the lens was extracted. By and by it will be necessary to perform discission of the capsule. Vision is now equal to counting of fingers. The three operations in both eyes were done with holocaïn.

Dr. Wood: Have you examined the cornea with a Coddington lens after the instillation of more than one drop of holocaïn solution and noted any changes at all?

Dr. Wilder asked Dr. Würdemann whether he has had much experience with injecting it beneath the skin to produce anesthesia.

Dr. Hale, in answer to the question of Dr. Wilder, said that according to several German reports, holocaïn has been injected hypodermically and it seems to have a toxic effect. Injected with the needle its local anesthetic effect is good, but the absorption produced by it is much more dangerous than a dose of cocain.

Dr. F. C. Hotz thought that there was not much difference between the views expressed by Dr. Würdemann and his own, except as he stated on a previous occasion that he considered holocaïn a more superficial anesthetic than cocain. He cannot quite understand on what ground Dr. Würdemann claims the absorption of holocaïn. The absorption is a sort of osmotic process, and has nothing to do with the circulation. Now if there is an insufficient effect of atropin in cases of iritis and a drop of cocain is instilled preceding the use of atropin, a better mydriasis is often obtained; hence cocain should rather favor absorption of the remedy by osmosis. Dr. Hotz does not stop during an operation on the muscles to apply any more of the anesthetic, because it has always seemed to him that when the blood begins to flow, there is not much benefit from these after applications. All the benefit is derived from the

primary applications. There is one other point he wished to speak of and that is, he has put holocaïn in his own eyes to test the duration of the anesthetic, and has found by several experiments that at the end of five minutes he begins to feel slightly the touch of the instrument, and then sensation would rapidly recover. The pain connected with the application of holocaïn was most intense, in his own eye, for half a minute. One per cent. solution was used. He felt the after-effects for hours. There is one advantage in that the solution is very stable; it does not undergo any chemical or bacteriological change. It is not necessary to get a new solution every time an operation is performed.

Dr. John F. Fulton, of St. Paul, Minn., has used holocaïn for the past few months altogether in his clinic for its local anesthetic effect, and is pleased with it, especially in the removal of foreign bodies in the cornea, such as cinders, where slight anesthetic effect is needed without interfering with the accommodation. He can confirm what Dr. Würdemann has said, who first drew his attention to this local anesthetic. The most important advantage in addition to that, is its action upon inflamed tissue. It is well known that cocain does not act upon the inflamed conjunctiva, and consequently in removing the stitches following an operation in which the conjunctiva is cut through this is a great advantage. In any form of inflammation of the eyes, where a local anesthetic is desired, he considers holocaïn of great advantage. It is a valuable addition to our armamentarium. It is extremely useful in certain cases in which cocain cannot be used with advantage. For cataract extractions Dr. Fulton still prefers cocain. He believes that it produces in the non-inflamed eye more complete local anesthesia. Again, holocaïn does not seem to contract the blood vessels of the conjunctiva as cocain does, although the local effect is more satisfactory.

Dr. Würdemann, in response to Dr. Wood's question, said he has not yet examined the cornea with a Coddington lens after the use of holocaïn, and has had no experience in injecting holocaïn subcutaneously. It is, however, about four times more toxic than cocain, and is not to be used subcutaneously. He does not believe any one has yet tried the combined action of cocain and holocaïn, either locally or subcutaneously. In a recent article, an abstract of which is published in the *Annals of Ophthalmology* (p. 820, October, 1897,) there will be found a note upon combined cocain and eucain anesthesia for subcutaneous use. The conclusion that holocaïn was more readily absorbed was arrived at from the fact that its anesthetic effect may be indefinitely prolonged, and it seemed to him that the reason why cocain anesthesia could not be indefinitely prolonged

was that the blood supply was cut off, although absorption is largely a question of osmosis. It was first used upon his own eyes and those of others before any operations were performed or applied to the eyes of patients. It was noticed that a peculiar cooling sensation existed probably an hour after its application. In one per cent. solution it creates no irritation, no more than from a five per cent. solution of cocain.

Dr. Bulson: If holocain is four times as toxic as cocain is it not possible by prolonging its use to get a toxic effect?

Dr. Würdemann said it is used in one-fifth the strength of cocain—a one per cent. solution. The introducer warns against its subcutaneous use as it produces clonic spasms like those of strychnia when injected under the skin of animals. Locally no effects have been observed by any one.

The Wochenschrift für Therapie und Hygiene des Auges is a new weekly ophthalmic journal, which commenced its publication last November. It is edited by Dr. Wolffberg, of Breslau, No. 9 Freiburger Strasse, with the assistance of Prof. Herm. Cohn, of Breslau, and Doctors Elze, Gottschalk, Herrnheiser, Jacobsohn, Krienes, Ohlemann and Wintersteiner.

If the number for January 1, 1898, is an indication of the future character of the journal, all those who read German should subscribe.

The Sixty-first annual report of the Ohio State Institution for the Education of the Blind, was filed with Governor Bushnell Friday. There were 301 pupils at the institution during the year, the daily attendance averaging 292½. Seventy-three of the eighty-eight counties of the State were represented in the attendance. Eight pupils graduated at the annual commencement. Dr. L. M. Early, the physician, reports that the health of the pupils was remarkably good throughout the year. There were no deaths.

Dr. J. E. Brown, the oculist, who is employed to treat the eyes of such of the pupils as can be helped in this way, reports that 35 per cent. of the cases of blindness are the result of preventable diseases. It is, therefore, clearly within the power of science to greatly reduce the number of blind. —*Cleveland Journal of Medicine*, Dec. 1897.

NEWS ITEMS.

Personals and items of interest should be sent to Dr. Frank Allport, 92 State St., Chicago.

For Sale or Exchange. Knapp's Archives of Otology, volumes eight to twenty-four, inclusive.

CASSIUS D. WESCOTT, 31 Washington Street.

DR. GEORGE KINNEY, of Burlington, Iowa, has returned from Europe, where he has been spending some time in the London and Paris hospitals.

DR. GEORGE H. PRICE, of Nashville, Tenn., one of the first editors of THE OPHTHALMIC RECORD, was married the 15th day of December. The name of his bride was Miss Mattie Barr Sperry, also of Nashville, Tenn. The Doctor and his bride are now off on a southern tour.

THE third annual meeting of the "Western Ophthalmological, Otological, Laryngological and Rhinological Association," of which Dr. B. E. Fryer, of Kansas City, is president, and Dr. Frank M. Rumbold, of St. Louis, is secretary, will hold its third annual meeting in Chicago next April. A local committee has been appointed to take charge of the meeting and provide for its entertainment. The officers of this committee are Dr. J. Elliott Colburn, president, Dr. H. H. Brown, treasurer, and Dr. T. A. Woodruff, secretary.

It is to be hoped that the meeting will be a large one, and that gentlemen engaged in these lines of practice from all over this western country will be sure to attend.

THE 9th semi-annual session of the Central Texas Medical Association met at Hillsboro, Tex., Jan. 11th and 12th, 1898. This Association possesses a Section of Ophthalmology and Otology of which John O. McReynolds, M.D., of Dallas, is Chairman, and R. E. Moss, M.D., of San Antonio, is Secretary.

Papers read before this Section were as follows:

1. Report of Chairman, Dr. J. O. McReynolds, Dallas.

2. "Nervous Reflexes, their causes, etc.," Dr. W. F. Cole, Waco.
3. "Wounds of the Cornea," Dr. D. E. Seay, Dallas.
4. Report of Cases, Dr. R. E. Moss, San Antonio.
5. "Systemic Remedies in Eye Diseases," Dr. S. W. McJunkin, Dallas.

A CERTAIN firm of opticians, located not less than a thousand miles from Chicago, has the assurance to send out the following circular letter:

DEAR SIR:—

"We will pay you $3.00 cash, out of the first money received, for every case of cataract you can send us.

We have a remedy, "Jubannia," which cures cataracts, even senile cataracts, by absorption. It is perfectly harmless when used as our oculists prescribes it and is absolutely curative in curable cases.

We employ a physician whose opinion is reliable and who passes upon each case.

Upon request we will mail you literature regarding the remedy, "Jubannia."

Below please find blanks for names. Your own name will not be mentioned to the patient unless you desire it.

Very respectfully,

_____."

PROF. EDWARD L. HOLMES, for many years the distinguished president of Rush Medical College, has resigned to be succeeded by Dr. Harper, of the Chicago University. This move was necessary in order to complete the amalgamation of Rush Medical College with the Chicago University. Dr. Holmes has for many years been one of the leading ophthalmologists and otologists of this country, and his friends hope that he may live many years to enjoy the confidence and respect of the profession and community amongst whom he has lived. Dr. Holmes will be seventy years of age February 11, and his resignation will take effect at that time. More than a year ago it was rumored that Dr. Holmes would resign from the presidency of Rush Medical College on the attainment of his seventieth birthday, in order to make room for a younger and more active man. He was the first physician in Chicago to limit his practice to diseases of the eye and ear, and was the founder of the Illinois Eye and Ear Infirmary, which has so long been one of the landmarks of this city. He became Professor of Ophthalmology and Otology in the Rush Medical College in 1860, and accepted the presidency in 1883. Dr. Holmes was one of the original workers at the Presbyterian Hospital, and has been identified

with the best and most progressive work in ophthalmology and otology in the city of Chicago. The Ophthalmic Record congratulates him upon his long and honorable career, and hopes that he may live long to enjoy the fruits of his labor.

We are promised next June a new work entitled, "An American Text-Book of Diseases of the Eye, Ear, Nose, and Throat."

It will be edited by Dr. G. E. de Schweinitz and Dr. B. Alex. Randall, of Philadelphia, which is of itself a guarantee of the high character of the work. It will be for sale by subscription only and will consist of one magnificent volume of about eleven hundred pages, fully illustrated, uniform with other volumes in the American Text-Book Series. Prices approximately, cloth, $7.00, sheep or half morocco, $8.00 net. Orders mailed now to the editors will be filled without delay when the work is issued.

The list of contributors is as follows:

Philadelphia—Harrison Allen, Albert P. Brubaker, A. A. Bliss, Walter J. Freeman, Edward Jackson, G. Hudson Makuen, R. J. Phillips, Geo. A. Piersol, B. Alex. Randall, G. E. de Schweinitz. New York—Morris J. Asch, Albert H. Buck, Edward B. Dench, Alexander Duane, William S. Dennett, Ward A. Holden, Herman Knapp, Robert C. Myles, J. E. Newcomb, John E. Weeks. Boston—Clarence J. Blake, J. H. McCollom, John W. Farlow, J. Orne Green, Geo. A. Leland. Chicago—Wm. E. Casselberry, F. C. Hotz, Norval H. Pierce, Casey A. Wood, Frank Allport. Brooklyn—Henry A. Alderton, John E. Sheppard, Jonathan Wright. Cleveland—B. L. Millikin. Baltimore—Robert L. Randolph, Samuel Theobald. Washington—Swan M. Burnett, Joseph H. Byran. Buffalo A. A. Hubbell, Lucien Howe. Pittsburg—J. A. Lippincott. San Francisco—William E. Hopkins. Ann Arbor—Flemming Carrow. Omaha —Harold Gifford. Milwaukee—H. V. Würdemann. Charleston—Charles W. Kollock, W. Peyre Porcher. Cincinnati—S. C. Ayres, C. R. Holmes. St. Louis—Wm. C. Glasgow, J. E. Jennings. Minneapolis—R. O. Beard. Providence—Horace G. Miller. Detroit—E. L. Shurley. Rochester—John O. Roe. Montreal, Can.—Frank Buller.

Several issues of the sixth (1897) volume are almost exhausted. The price for a complete set will hereafter be $5.00. Odd numbers will be furnished, as long as they last, for 50 cents each. Address,

The Ophthalmic Record, Suite 3, The High Building, Chicago.

Fifty Cents Each

WILL BE PAID
FOR COPIES OF THE

APRIL, 1897,
NUMBER

OF THE

Ophthalmic Record

ADDRESS
CASEY A. WOOD
103 Adams Street, . . CHICAGO

H. C. Boden & Co.

MANUFACTURING
OPTICIANS.....

S. E. Corner Walnut and 13th Streets

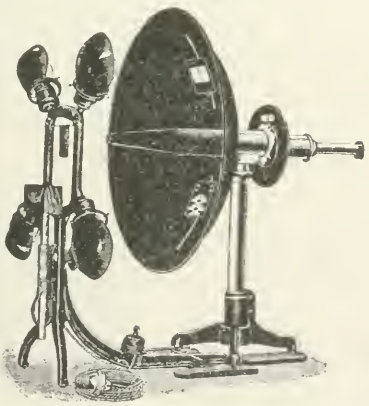
PHILADELPHIA

Philadelphia Agents for the

OPHTHALMIC
RECORD

The Hardy Ophthalmometer

Every
Instrument
Fully
Guaranteed

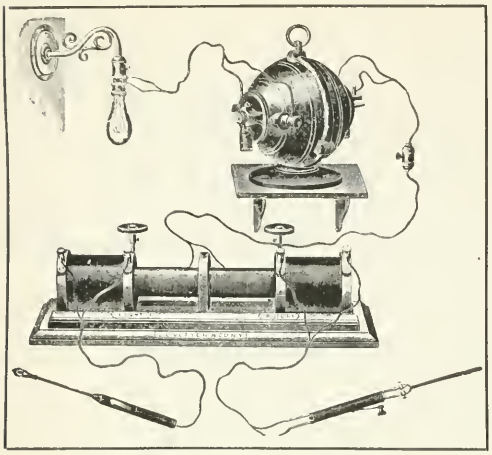


Is
Acknowledged
to be
the Best

BECAUSE:— { It has the Best Definition.
Is the Simplest and Easiest to Operate.

Globe Optical Co., New England Agents, Boston, Mass.

THE VETTER CAUTERY CONTROLLERS



For the 110 volt Direct Current and for the 52 or 104 volt Alternating Current.

These Controllers have separate coils for cautery knives and diagnostic lamps, and are easily manipulated.

All cautery knives, from the smallest up, may be heated, and every style of diagnostic lamp illuminated.

Can be attached to any electric light fixtures without requiring special wiring.

Send for descriptive circular, and state whether the 110 volt direct or the 52 or 104 alternating current is to be used.

ARTIFICIAL EYES.

Price, first quality, $2.00; second quality, $1.00

We will furnish order blanks for Artificial Eyes, upon request, and are prepared to send a selection to responsible parties.

E. B. Meyrowitz

OPTICIAN

Maker of Ophthalmological, Electro-Medical and X-Ray Apparatus, High grade Eye, Ear, Nose, and Throat Instruments. Unsurpassed facilities for the prompt and accurate execution of Oculists' Prescription Orders. Send for new revised price list of prescription work.

104 East Twenty-third St., NEW YORK.

Annals of Ophthalmology

The largest illustrated Quarterly Eye Journal published. Each issue over 200 pages of original matter and properly drawn up abstracts of recent Domestic and Foreign Ophthalmic Literature.

Subscription price, $4.00 per annum.

Annals of Otology, Rhinology and Laryngology

Each issue over 150 pages original matter and properly drawn abstracts of recent Domestic and Foreign Literature.

Subscription price, $3.00 per annum.

Both Journals, $5

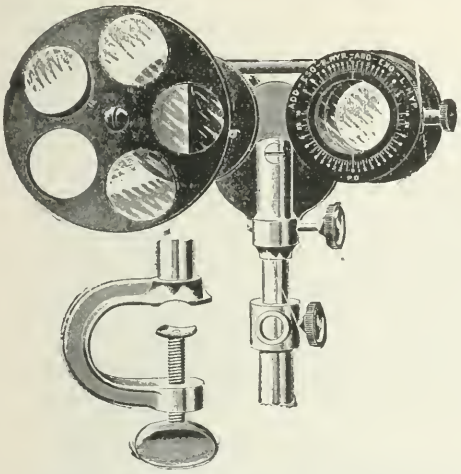
Address **JONES H. PARKER, Publisher, 108 N. 4th St., St. Louis, Mo.**

Wood's Ophthalmic Discs

These Compressed and Gelatine Ophthalmic Discs, prepared by JOHN WYETH & BRO., PHILADELPHIA, after the formula of Dr. Casey A. Wood, are so modified and improved upon as to be most convenient and efficient in the treatment of all affections of the eye. Send for circular and price list to

John Wyeth & Bro., Mfg. Chemists, Philadelphia, Pa.

Every Oculist in the Country



Interested in
Accurate
and
Reliable
Muscle
Tests

Should have a. ....

Dr. Harold Wilson Phorometer

SEND FOR DESCRIPTIVE CIRCULAR TO

E. KIRSTEIN'S SONS CO., Rochester, N. Y.

THE

Post-Graduate Medical School

OF CHICAGO

W. FRANKLIN COLEMAN, M. D., Prest.
W. L. BAUM, M D., Treas.

J. B. BACON, M. D., Vice-Prest.
L. L. McARTHUR, M. D.

Is now located in its new building,

2400 Dearborn Street

A school for practitioners of Medicine and Surgery.

Teaching exclusively Clinical.

Abundance of material.

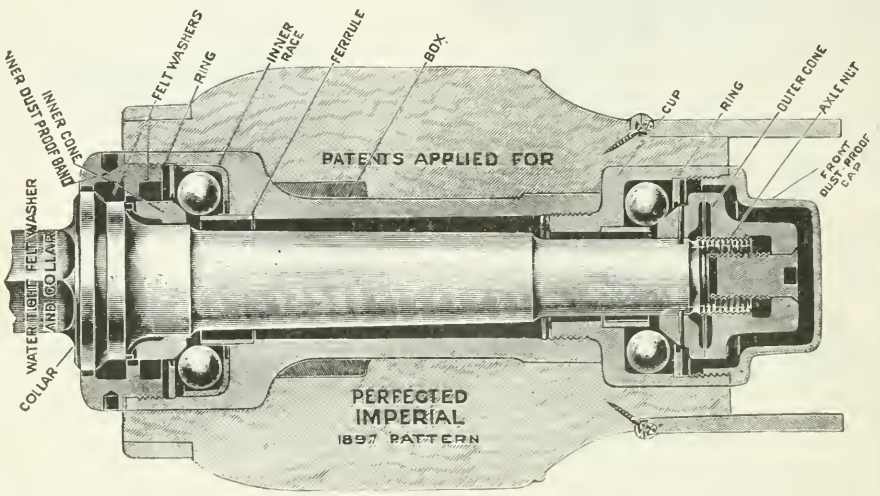
Large hospital in School Building.

Send for latest Bulletin of information to

FRANKLIN H. MARTIN, M.D., Secy, 2400 Dearborn St.

THE

Imperial Ball Bearing Axle



TRY A SET—THEY HAVE NO EQUAL

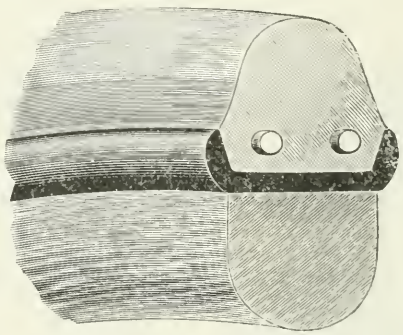
THE

Kelley, Maus & Co., Solid Rubber Tire

LATEST IN DESIGN MOST DURABLE RUBBER

NEATEST IN APPEARANCE

Ball Bearing
Axle and
Rubber Tire
Dept.
439 Wabash Av.



Long Distance
Telephone
152 Harrison

KELLEY, MAUS & CO., 184-190 Lake St., Chicago

Chambers, Inskeep & Co.

WHOLESALE AND MANUFACTURING

OPTICIANS

146 State Street, Chicago.

Make Oculists' Prescription Work a Specialty.

Have the necessary machinery and skilled workmen to turn out this class of work with accuracy and dispatch, and at as low prices as are consistent with perfect goods. We carry constantly in stock a large line of Oculists' Trial Cases, Ophthalmoscopes, Microscopes, etc., on which we shall be pleased to quote you prices.

CATALOGUE SENT ON APPLICATION.

....The....

Laryngoscope

The only regular MONTHLY journal published in America devoted *exclusively* to Diseases of the **Nose, Throat and Ear.** Recognized as the *American journal of record* of the specialties which it represents. Enjoys the contributions and endorsement of the best and ablest specialists in the profession.

THE OFFICIAL ORGAN of the

New York Academy of Medicine (Section of Rhinology and Laryngology).

American Laryngological, Rhinological and Otological Association (Southern Section)

Western Otological, Rhinological and Laryngological Association.

Sixty-four pages original matter.
Published in America and Great Britain.

P. O. BOX 787 . . ST. LOUIS, MO.

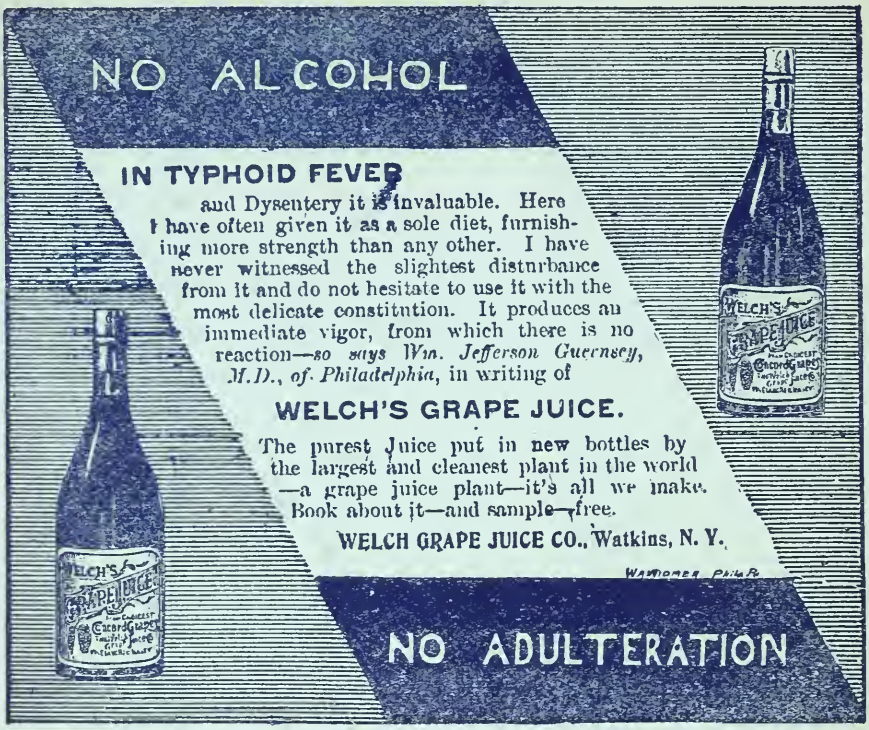
ELECTRO THERAPEUTICS

...CATALOGUE FREE...

McINTOSH BATTERY & OPTICAL CO.

No. 552

CHICAGO.

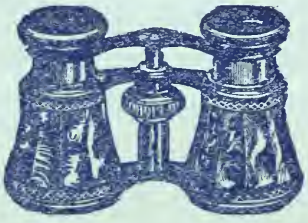

NO ALCOHOL
IN TYPHOID FEVER
and Dysentery it is invaluable. Here I have often given it as a sole diet, furnishing more strength than any other. I have never witnessed the slightest disturbance from it and do not hesitate to use it with the most delicate constitution. It produces an immediate vigor, from which there is no reaction—so says Wm. Jefferson Guernsey, M.D., of Philadelphia, in writing of
WELCH'S GRAPE JUICE.
The purest Juice put in new bottles by the largest and cleanest plant in the world —a grape juice plant—it's all we make. Book about it—and sample—free.
WELCH GRAPE JUICE CO., Watkins, N. Y.
NO ADULTERATION

Makers of
Perfect Fitting

SPECTACLES and
EYE-GLASSES

Stewart Building, 94 State Street
CHICAGO.

OPERA AND FIELD GLASSES OF EVERY DESCRIPTION



A GROWING number of oculists subscribe to The Optical Journal for the purpose of keeping informed as to the latest inventions of opticians, and the methods of the best refractionists.

The Optical Journal

is the only paper devoted exclusively and entirely to optics and the optical trade.

One Dollar a Year.
10 Cents a Copy.

Published once a month by

FREDERICK BOGER
36 Maiden Lane, New York City.